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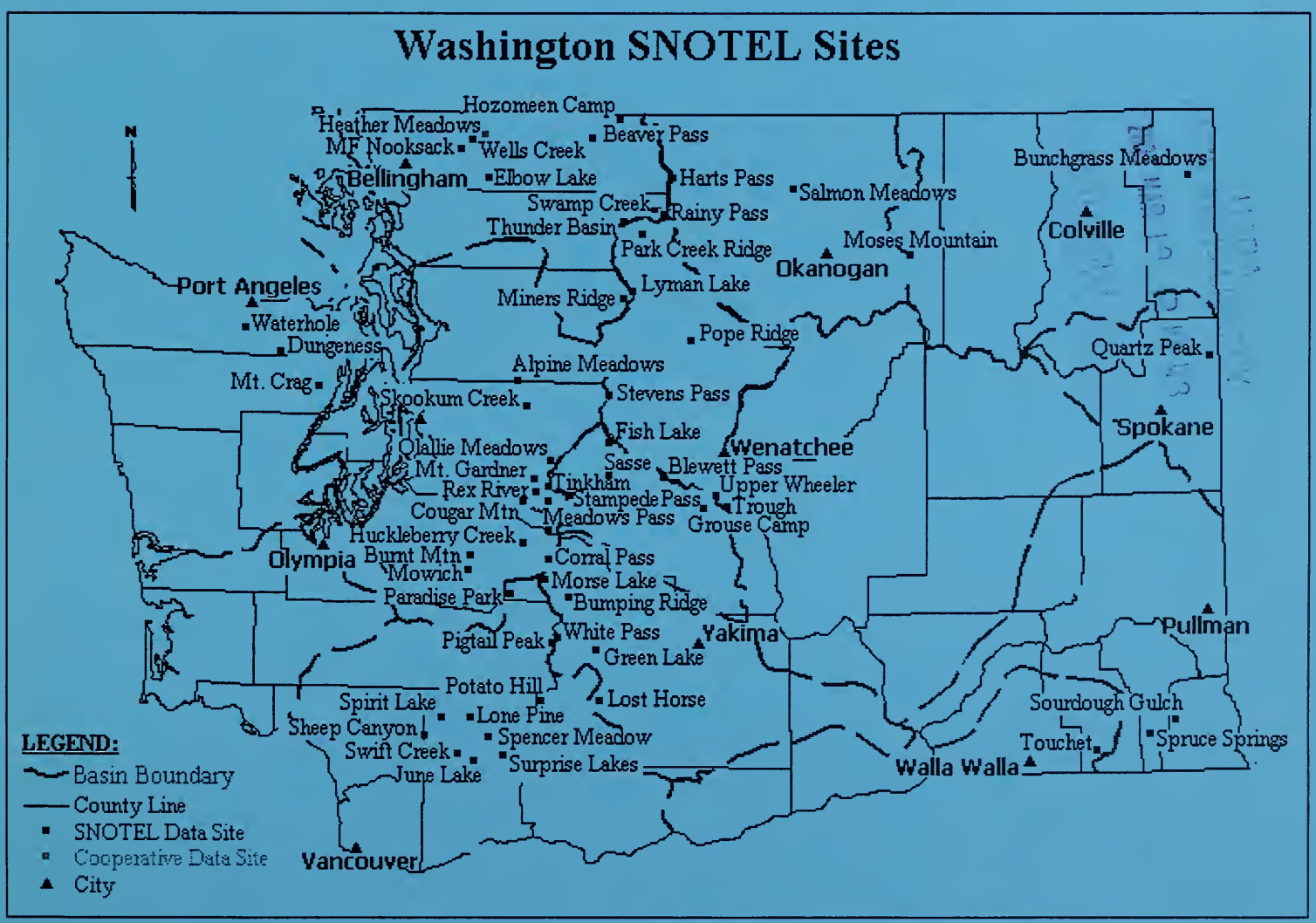
United States Department of Agriculture

Washington Water Supply Outlook Report March 1, 2003



Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

Washington
Water Supply Outlook

March 2003

General Outlook

Washington experienced a return to below average precipitation in February. Temperatures were closer to normal last month however, which may have been due to fewer storms and more open days. The most recent storm pattern began on March 5th and is forecasted to continue through the following week. To date, this storm has reported as much as 36" of new snow with increases as high as 11% of average snow-water-content. Yet to be understood is what effect this storm will have on on spring and summer streamflow.

Snowpack

The March 1 statewide SNOTEL readings remained much below average at only 63%. The Elwah Basin snow surveys reported the lowest readings at 27% of average. Snow surveys in the Colockum Creek Basin reported the highest at 1134% of average. Westside averages from SNOTEL, and March 1 snow surveys, included the North Puget Sound river basins with 51% of average, the Central Puget river basins with 41%, and the Lewis-Cowlitz basins with 56% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 66% and the Wenatchee area with 75%. Snowpack in the Spokane River Basin was at 53% and the Walla Walla River Basin had 58% of average. Maximum snow cover in Washington was at Cayuse Pass on the break of the Cowlitz River and White River basins, with water content of 45.2 inches. This site would normally have 64.8 inches of water content on March 1. Last year at this time Cayuse Pass had 70 inches of snow water. The highest average in the state was Trough SNOTEL site near Wenatchee with 134% of average.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	43	53
Newman Lake	50	59
Pend Oreille	83	74
Okanogan	68	71
Methow	71	72
Similkameen	52	46
Wenatchee	71	69
Chelan	59	68
Upper Yakima	55	59
Lower Yakima	70	73
Ahtanum Creek	78	79
Walla Walla	48	58
Lower Snake	64	69
Cowlitz	53	61
Lewis	31	52
White	67	74
Green	36	42
Puyallup	67	74
Cedar	29	43
Snoqualmie	30	46
Skykomish	29	45
Skagit	54	62
Baker	59	57
Nooksack	41	38
Olympic Peninsula	50	55

Precipitation

During the month of February, the National Weather Service and Natural Resources Conservation Service climate stations reported mostly below average precipitation totals throughout Washington river basins. The highest percent of average in the state was at Milton-Freewater, WA, which reported 158% of average for a total of 2.17 inches. The average for this site is 1.37 inches for February. The wettest spot in the state was reported at Rainier Paradise, WA with a February accumulation of 11.62 inches, about 2.3 inches below the 30-year average for the site. Basin averages for the water year dropped again with below average February precipitation. The Okanogan - Methow river basins reported the highest at 89%, down 11 percentage points form last month, and the Upper Yakima reported the lowest at 69% of average. All basins decreased 1-13% from last month's report except the Walla Walla and Lower Snake river basins, which saw increases of 1% & 3% receptively for the water year.

RIVER BASIN	FEBRUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	63	75
Colville-Pend Oreille	50	86
Okanogan-Methow	44	89
Wenatchee-Chelan	38	76
Upper Yakima	56	69
Lower Yakima	46	84
Walla Walla	89	85
Lower Snake	92	88
Cowlitz-Lewis	58	79
White-Green-Puyallup	63	71
Central Puget Sound	66	71
North Puget Sound	40	71
Olympic Peninsula	26	81

Reservoir

Seasonal reservoir levels in Washington vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation and flood control. Reservoir storage in the Yakima Basin was 424,300-acre feet, 85% of average for the Upper Reaches and 157,300-acre feet, 114% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 40% of average for March 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 101,700 acre feet, 70% of average and 43% of capacity; Chelan Lake, 276,500 acre feet, 111% of average and 41% of capacity; and the Skagit River reservoirs at 116% of average and 70% of capacity.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	43	70
Colville-Pend Oreille	88	131
Okanogan-Methow	29	40
Wenatchee-Chelan	41	111
Upper Yakima	51	85
Lower Yakima	68	114
North Puget Sound	70	116

For more information contact your local Natural Resources Conservation Service office.

Streamflow

March forecasts vary from 93% of average for Salmon Creek near Conconully to 50% of average for Mill Creek at Walla Walla. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 68%; Green River, 69%; and Skagit River, 70%. Some Eastern Washington streams include the Yakima River near Parker, 65%: Wenatchee River at Plain, 63%; and Spokane River near Post Falls, 58%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Statewide February streamflows varied from much below too much above average. Mostly due to reservoir management in anticipation of spring runoff. The South Fork Walla Walla River near Milton-Freewater had the highest reported flows with 168% of average. The Okanogan River at Tonasket with 52% of average, was the lowest in the state. Other streamflows were the following percentage of average: the Cowlitz, 58%; the Spokane at Spokane, 114%; the Columbia below Rock Island Dam, 82%; and the Cle Elum near Roslyn, 126%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	58-61
Colville-Pend Oreille	68-83
Okanogan-Methow	57-93
Wenatchee-Chelan	63-73
Upper Yakima	60-63
Lower Yakima	58-75
Walla Walla	50-71
Lower Snake	69-76
Cowlitz-Lewis	58-71
White-Green-Puyallup	69-70
Central Puget Sound	68-69
North Puget Sound	67-71
Olympic Peninsula	74-76

STREAM	PERCENT OF AVERAGE FEBRUARY STREAMFLOWS
Pend Oreille Below Box Canyon	73
Kettle at Laurier	73
Columbia at Birchbank	67
Spokane at Long Lake	111
Similkameen at Nighthawk	68
Okanogan at Tonasket	52
Methow at Pateros	66
Chelan at Chelan	75
Wenatchee at Pashastin	111
Yakima at Cle Elum	121
Yakima at Parker	134
Naches at Naches	122
Grande Ronde at Troy	82
Snake below Lower Granite Dam	86
SF Walla Walla near Milton Freewater	168
Columbia River at The Dalles	84
Lewis at Ariel	115
Cowlitz below Mayfield Dam	133
Skagit at Concrete	75

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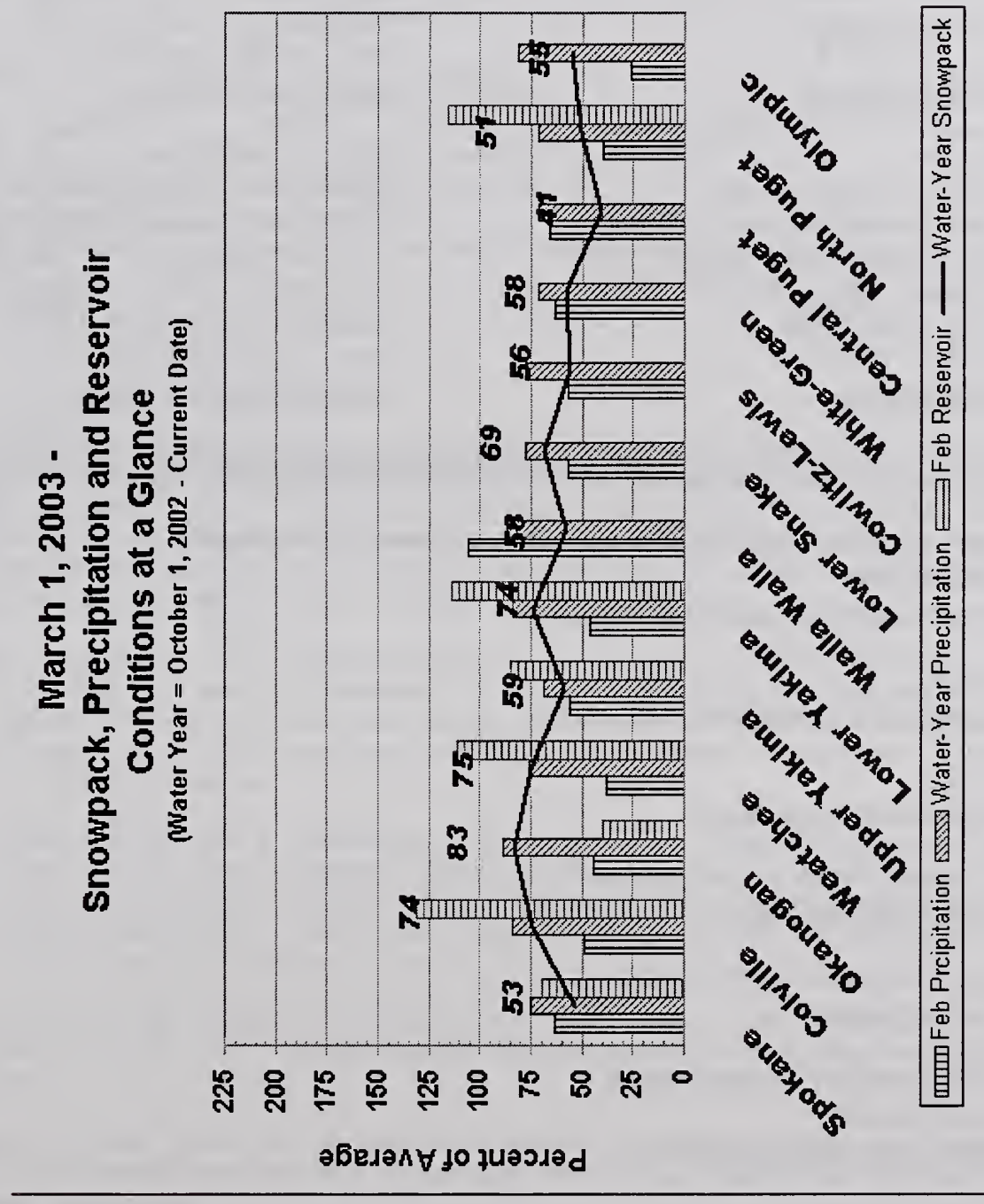
BASIN SUMMARY OF SNOW COURSE DATA

MARCH 2003

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ABERDEEN LAKE CAN.	4000	2/26/03	16	3.4	4.8	5.7
AHTANUM R.S.	3100	2/26/03	17	5.4	4.0	7.0
ALPINE MEADOWS	3500	3/01/03	---	11.5E	71.5	33.8
ALPINE MEADOWS SNTL	3500	3/01/03	---	12.1	81.0	36.5
AMBROSE	6480	3/03/03	41	10.3	7.6	10.5
ASHLEY DIVIDE	4820	2/25/03	13	2.4	4.6	6.2
BADGER PASS SNOTEL	6900	3/01/03	58	17.8	29.7	29.7
BAREE MIDWAY	4600	2/26/03	61	18.5	27.4	28.7
BAREE TRAIL	3800	2/26/03	20	5.9	11.6	8.2
BARKER LAKES SNOTEL	8250	3/01/03	40	10.2	7.3	11.1
BARNES CREEK CAN.	5320	2/24/03	52	15.1	16.9	17.3
BASIN CREEK SNOTEL	7180	3/01/03	---	6.2	4.1	6.1
BASSOO PEAK	5150	2/27/03	23	6.4	7.6	9.0
BEAVER CREEK TRAIL	2200	3/10/03	---	8.5E	16.0	13.0
BEAVER PASS	3680	3/01/03	---	16.5E	30.1	24.9
BERNE-MILL CREEK (d)	3170	2/28/03	52	15.0	25.3	25.3
BIG CREEK	6750	2/24/03	75	24.3	--	36.2
BLACK MOUNTAIN	7750	2/26/03	45	11.8	6.8	11.4
BLACK PINE SNOTEL	7100	3/01/03	39	9.8	6.1	10.1
BLEWETT PASS#2SNOTEL	4270	3/01/03	35	11.2	10.4	15.7
BLUE LAKE	5900	2/23/03	44	10.9	17.6	21.1
BRENDA MINE CAN.	4450	3/01/03	---	8.3	15.3	11.6
BRIEF	1600	2/26/03	19	7.1	4.4	6.9
BROOKMERE CAN.	3000	2/28/03	15	4.4	5.9	7.5
BRUSH CREEK TIMBER	5000	2/26/03	14	3.5	6.2	7.5
BULL MOUNTAIN	6600	2/27/03	25	6.2	4.0	5.1
BUMPING LAKE (NEW)	3400	2/27/03	40	13.6	16.0	16.9
BUMPING RIDGE SNOTEL	4600	3/01/03	---	16.0	29.1	24.9
BUNCHGRASS MDWSNOTEL	5000	3/01/03	---	24.6	28.0	24.4
CARMI CAN.	4100	3/01/03	---	4.0E	4.0	5.8
CAYUSE PASS	5300	2/28/03	118	45.2	70.0	64.8
CHESSMAN RESERVOIR	6200	2/28/03	10	2.0	1.0	3.1
CHICKEN CREEK	4060	2/27/03	40	11.1	14.2	14.4
CHIWAUKUM G.S.	2500	2/28/03	23	7.2	8.8	10.8
CLOUDY PASS AM	6500	3/01/03	---	27.5E	45.0	39.4
COMBINATION SNOTEL	5600	3/01/03	---	5.6	3.2	4.5
COPPER BOTTOM SNOTEL	5200	3/01/03	25	6.8	9.7	9.9
COPPER CREEK	5700	2/22/03	30	5.6	11.9	12.5
COPPER MOUNTAIN	7700	2/23/03	37	7.9	6.1	8.9
CORNER CREEK	3150	2/27/03	4	1.2	10.7	6.7
CORRAL PASS SNOTEL	6000	3/01/03	---	20.9	33.6	29.5
COTTONWOOD CREEK	6400	2/28/03	27	6.2	3.0	6.0
COUGAR MTN. SNOTEL	3200	3/01/03	14	3.6	20.8	17.1
COX VALLEY	4500	2/23/03	52	18.1	35.0	31.7
COYOTE HILL	4200	2/28/03	19	5.4	7.0	9.1
DALY CREEK SNOTEL	5780	3/01/03	38	9.6	6.6	9.4
DEER PARK	5200	2/25/03	20	7.7	17.8	15.1
DESERT MOUNTAIN	5600	2/22/03	40	8.6	10.2	12.6
DEVILS PARK	5900	3/01/03	---	19.0E	49.6	37.9
DISCOVERY BASIN	7050	2/27/03	39	9.1	4.5	8.4
DIX HILL	6400	2/23/03	34	7.6	7.6	10.0
DOMMERIE FLATS	2200	2/25/03	0	.0	7.0	7.2
EAST FORK R.S.	5400	3/01/03	---	5.1E	3.3	5.6
EAST RAGGED SADDLE	3740	3/02/03	28	10.2	25.6	16.8
EASY PASS AM	5200	3/01/03	---	45.5E	68.5	65.1
EL DORADO MINE	7800	2/28/03	55	15.6	11.0	15.8
ELBOW LAKE SNOTEL	3200	3/01/03	37	13.2	40.4	34.3
EMERY CREEK SNOTEL	4350	3/01/03	---	9.5	10.5	13.3
ENDERBY CAN.	5800	2/27/03	80	28.0	39.0	28.6
ESPERON CK. UP CAN.	5050	2/23/03	32	8.3	16.2	14.6
FARRON CAN.	4000	2/24/03	35	8.6	10.6	11.3
FATTY CREEK	5500	2/24/03	50	14.9	16.6	20.4
FISH CREEK	8000	2/25/03	29	6.6	3.8	7.8
FISH LAKE	3370	2/25/03	55	19.5	32.5	29.9
FISH LAKE SNOTEL	3370	3/01/03	51	17.5	28.6	30.6
FLATTOP MTN SNOTEL	6300	3/01/03	97	30.4	41.9	39.2
FLEECER RIDGE	7500	2/27/03	32	8.8	7.4	9.2
FOURTH OF JULY SUM	3200	2/27/03	2	1.0	13.7	8.2
FREEZEOUT CK. TRAIL	3500	3/01/03	---	4.0E	10.8	11.3
FROHNER MDWS SNOTEL	6480	3/01/03	26	6.3	3.7	6.3
GOAT CREEK	3600	2/24/03	20	5.6	5.2	6.1
GRASS MOUNTAIN #2	2900	2/26/03	4	.7	14.3	9.8
GRAVE CRK SNOTEL	4300	3/01/03	---	11.6	13.8	14.5
GREEN LAKE	6000	3/01/03	---	25.0E	32.0	29.2
GREEN LAKE SNOTEL	6000	3/01/03	50	16.0	22.2	19.7
GREYBACK RES CAN.	4700	2/27/03	27	7.5	6.9	7.8
GRIFFIN CR DIVIDE	5150	2/27/03	18	4.5	7.8	9.5
GROUSE CAMP SNOTEL	5380	3/01/03	---	16.5	19.6	17.6
HAMILTON HILL CAN.	4550	3/01/03	---	7.5E	12.0	12.7
HAND CREEK SNOTEL	5030	3/01/03	23	5.7	7.6	9.9
HARTS PASS SNOTEL	6500	3/01/03	77	20.3	38.9	39.7
HELL ROARING DIVIDE	5770	2/27/03	58	20.0	24.8	25.8
HERRIG JUNCTION	4850	2/27/03	60	19.4	23.0	22.2
HIGH RIDGE SNOTEL	4980	3/01/03	---	12.9	23.7	21.2
HOLBROOK	4530	2/28/03	18	5.0	8.7	8.3
HOODOO BASIN SNOTEL	6050	3/01/03	85	23.4	41.4	38.6
HUMBOLDT GLCH SNOTEL	4250	3/01/03	---	2.9	14.1	11.7
HURRICANE	4500	2/23/03	12	4.2	17.5	15.6
INTERGAARD	6450	2/26/03	26	5.7	2.0	6.2
ISINTOK LAKE CAN.	5100	2/28/03	15	2.6	5.1	6.5
JUNE LAKE SNOTEL	3200	3/01/03	---	11.8	53.9	33.9
KELLER RIDGE	3700	2/26/03	14	4.5	4.2	--
KELLOGG PEAK	5560	2/28/03	45	13.4	26.2	25.8
KISHENEHN	3890	2/24/03	20	4.7	8.0	7.3
KLESILKWA CAN.	3450	2/25/03	13	2.5	16.3	10.5
KRAFT CREEK SNOTEL	4750	3/01/03	---	10.0	12.0	13.6
LESTER CREEK	3100	2/26/03	27	7.8	21.4	17.2
LIGHTNING LAKE CAN.	3700	2/28/03	28	7.5	9.8	10.3
LOGAN CREEK	4300	2/26/03	16	3.7	4.6	6.2
LOLO PASS SNOTEL	5240	3/01/03	77	22.4	24.0	26.8
LONE PINE SNOTEL	3800	3/01/03	---	16.7	48.7	31.7
LOOKOUT SNOTEL	5140	3/01/03	51	13.9	33.4	27.2
LOST HORSE MTN CAN.	6300	2/23/03	20	3.9	6.3	8.0
LOST HORSE SNOTEL	5000	3/01/03	43	14.2	19.7	18.3
LOST LAKE SNOTEL	6110	3/01/03	---	27.2	56.2	50.7
LOWER SANDS CREEK #2	3120	2/27/03	23	7.9	22.9	16.6
LUBRECHT FOREST NO 3	5450	2/25/03	17	3.6	4.1	5.6
LUBRECHT FOREST NO 4	4650	2/25/03	8	1.6	1.8	2.7
LUBRECHT FOREST NO 6	4040	2/26/03	8	1.8	2.8	3.2
LUBRECHT HYDROPLOT	4200	2/25/03	14	3.6	4.0	5.1
LUBRECHT SNOTEL	4680	3/01/03	16	4.2	4.5	5.3
LYMAN LAKE SNOTEL	5900	3/01/03	---	40.8	61.7	55.1
LYNN LAKE	4000	2/26/03	21	5.8	28.7	16.1
MARIAS PASS	5250	2/27/03	27	7.3	15.1	14.9
MCCULLOCH CAN.	4200	2/28/03	18	3.1	4.8	6.2
MEADOWS PASS SNOTEL	3240	3/01/03	---	10.9	31.9	19.8
MERRITT	2140	2/28/03	24	7.7	12.2	14.2
MICA CREEK SNOTEL	4750	3/01/03	44	13.5	27.6	23.2
MINERAL CREEK	4000	2/28/03	40	11.8	14.0	15.8
MISSEZULA MTN CAN.	5080	3/01/03	15	3.1	8.0	8.4
MISSION RIDGE	5000	2/28/03	45	14.7	15.7	15.2
MONASHEE PASS CAN.	4500	2/24/03	32	8.0	10.7	11.9
MORRISSEY RIDGE CAN.	6100	3/01/03	---	16.9	27.0	48.5
MORSE LAKE SNOTEL	5400	3/01/03	---	38.5	45.9	47.0
MOSES MOUNTAIN (2)	4800	2/24/03	25	13.5	12.3	17.5
MOSES MTN SNOTEL	4800	3/01/03	---	13.3	16.6	13.4
MOSES PEAK	6650	2/25/03	37	11.5	17.2	11.7
MOSQUITO RDG SNOTEL	5200	3/01/03	---	21.6	34.0	31.1
MOULTON RESERVOIR	6850	2/24/03	34	7.6	3.6	6.2
MOUNT CRAG SNOTEL	4050	3/01/03	47	18.7	28.1	26.8
MT. KOBAU CAN.	5500	3/01/03	35	10.2	10.6	10.2
MOUNT TOLMAN	2000	2/24/03	5	1.2	2.4	3.3
MOUNT GARDNER SNOTEL	2860	3/01/03	---	3.4	20.7	14.1
MUTTON CREEK #1	5700	2/28/03	40	13.0	13.2	12.0
N.F. ELK CR SNOTEL	6250	3/01/03	35	8.7	8.0	10.2
NEZ PERCE CMP SNOTEL	5650	3/01/03	---	10.2	9.7	12.7
NOISY BASIN SNOTEL	6040	3/01/03	73	24.4	32.6	33.8
OLALLIE MDWS SNOTEL	3960	3/01/03	---	27.3	48.9	48.9
OLALLIE MEADOWS	3630	3/01/03	---	20.0E	44.9	36.7
OPHIR PARK	7150	2/23/03	42	10.2	9.2	14.1
OYAMA LAKE CAN.	4100	2/27/03	16	3.2	5.8	6.2
PARADISE PARK SNOTEL	5500	3/01/03	---	34.2	66.6	59.7
PARK CK RIDGE SNOTEL	4600	3/01/03	79	30.1	51.4	44.1
PETERSON MDW SNOTEL	7200	3/01/03	---	9.1	4.0	7.8
PIGTAIL PEAK SNOTEL	5900	3/01/03	89	34.6	47.5	44.6
PIKE CREEK SNOTEL	5930	3/01/03	47	13.1	21.7	22.8
PIPESTONE PASS	7200	2/22/03	18	3.4	2.0	4.1
POPE RIDGE SNOTEL	3540	3/01/03	50	14.9	15.1	18.5
POSTILL LAKE CAN.	4200	2/28/03	21	4.8	7.2	7.3
POTATO HILL SNOTEL	4500	3/01/03	152	15.2	30.0	23.6
QUARTZ PEAK SNOTEL	4700	3/01/03	---	13.2	26.2	19.5
RAGGED RIDGE	3330	2/26/03	10	2.8	--	7.8
RAINY PASS SNOTEL	4780	3/01/03	54	25.9	41.4	38.2
REX RIVER SNOTEL	1900	3/01/03	25	9.8	41.1	23.9
ROCKER PEAK SNOTEL	8000	3/01/03	42	10.8	7.5	11.2
ROCKY CREEK AM	2100	3/01/03	---	7.0E	10.8	26.5
ROLAND SUMMIT	5120	2/27/03	57	20.0	40.0	29.2
RUSTY CREEK	4000	2/28/03	25	7.0	4.4	6.2
SADDLE MTN SNOTEL	7900	4/01/03	70	20.7	18.4	21.8
SAGE CREEK SADDLE	4080	2/27/03	27	7.8	25.7	15.5
SALMON MDWS SNOTEL	4500	3/01/03	35	9.8	8.8	10.1
SASSE RIDGE SNOTEL	4200	3/01/03	50	19.5	34.9	30.3
SAVAGE PASS SNOTEL	6170	3/01/03	71	20.3	21.1	22.5
SAWMILL RIDGE	4700	2/26/03	42	14.0	26.5	28.6
SCHREIBERS MDW AM	3400	2/26/03	72	24.8	51.6	43.5
SHEEP CANYON SNOTEL	4050	3/01/03	---	8.6	39.5	31.6
SHERWIN SNOTEL	3200	3/01/03	---	4.0	15.5	10.8
SILVER STAR MTN CAN.	5600	2/23/03	59	18.0	28.7	25.0
SKALKAHO SNOTEL	7260	3/01/03	63	18.1	17.9	20.2
SKITWISH RIDGE	5110	2/27/03	55	18.1	37.1	27.2
SKOOKUM CREEK SNOTEL	3920	3/01/03	---	5.3	41.4	18.9
SLIDE ROCK MOUNTAIN	7100	2/27/03	36	9.9	8.3	12.6
SOURDOUGH GULCH SNTL	4000	3/01/03	1	.4	.0	--
SPENCER MDW SNOTEL	3400	3/01/03	---	12.9	42.4	28.6
SPIRIT LAKE SNOTEL	3100	3/01/03	---	2.1	10.7	--
SPOTTED BEAR MTN.	7000	2/23/03	38	9.2	9.2	12.7

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
SOURDOUGH GULCH SNTL	4000	3/01/03	1	.4	.0	--
STAHL PEAK SNOTEL	6030	3/01/03	---	23.2	34.8	29.9
STAMPEDE PASS SNOTEL	3860	3/01/03	---	22.6	46.8	39.8
STEMILT SLIDE	5000	3/01/03	---	11.5E	11.1	12.8
STEMPLE PASS	6600	2/27/03	24	5.6	6.3	8.3
STEVENS PASS SNOTEL	4070	3/01/03	67	21.6	36.0	38.3
STEVENS PASS SAND SD	3700	2/28/03	56	18.0	29.9	30.6
STORM LAKE	7780	2/27/03	42	9.8	5.6	10.2
STRYKER BASIN	6180	2/27/03	63	20.0	29.6	26.9
SUMMERLAND RES CAN.	4200	2/27/03	20	4.3	8.5	8.4
SUMMIT G.S.	4600	3/01/03	---	7.4E	6.8	7.1
SUNSET SNOTEL	5540	3/01/03	---	10.8	19.1	26.0
SURPRISE LKS SNOTEL	4250	3/01/03	---	28.3	78.1	40.1
TEN MILE LOWER	6600	2/28/03	26	6.0	3.3	5.9
TEN MILE MIDDLE	6800	2/28/03	33	7.6	5.4	8.9
THUNDER BASIN	4200	3/01/03	---	13.0E	20.0	19.0
TINKHAM CREEK SNOTEL	3000	3/01/03	---	11.9	31.0	26.7
TOGO	3370	2/27/03	19	5.7	10.5	8.6
TOUCHET SNOTEL	5530	3/01/03	55	15.7	36.0	28.5
TRINKUS LAKE	6100	2/23/03	78	26.4	35.4	36.4
TROUGH #2 SNOTEL	5310	3/01/03	38	12.5	8.3	9.3
TROUT CREEK CAN.	5650	2/25/03	16	4.6	7.5	6.7
TRUMAN CREEK	4060	2/25/03	9	2.4	4.0	4.4
TUNNEL AVENUE	2450	2/26/03	23	8.6	22.0	18.6
TV MOUNTAIN	6800	2/24/03	41	10.3	13.5	15.2
TWELVEMILE SNOTEL	5600	3/01/03	44	11.9	14.7	16.0
TWIN CAMP	4100	2/26/03	27	8.3	18.0	21.5
TWIN CREEKS	3580	2/23/03	20	4.2	8.6	10.2
TWIN LAKES	2700	2/27/03	19	6.5	--	6.7
TWIN LAKES SNOTEL	6400	3/01/03	83	29.8	36.4	34.7
TWIN SPIRIT DIVIDE	3480	3/02/03	16	6.0	16.0	13.1
UPPER HOLLAND LAKE	6200	2/23/03	76	23.2	31.5	30.0
UPPER WHEELER SNOTEL	4400	3/01/03	33	11.2	8.8	11.7
VASEUX CREEK CAN.	4250	2/27/03	13	3.0	1.4	5.4
WARM SPRINGS SNOTEL	7800	3/01/03	---	17.4	13.8	17.0
WEASEL DIVIDE	5450	2/28/03	61	17.4	31.6	28.7
WELLS CREEK SNOTEL	4200	3/01/03	56	16.0	31.4	--
WHITE PASS ES SNOTEL	4500	3/01/03	45	12.8	21.4	21.8
WHITE ROCKS MTN CAN.	7200	3/03/03	39	11.6	24.0	19.6



USDA NRCS
Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow/snow.htm

Oregon:
http://www.or.nrcs.usda.gov/snow/snow.htm

Idaho:
http://idsnow.id.nrcs.usda.gov

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

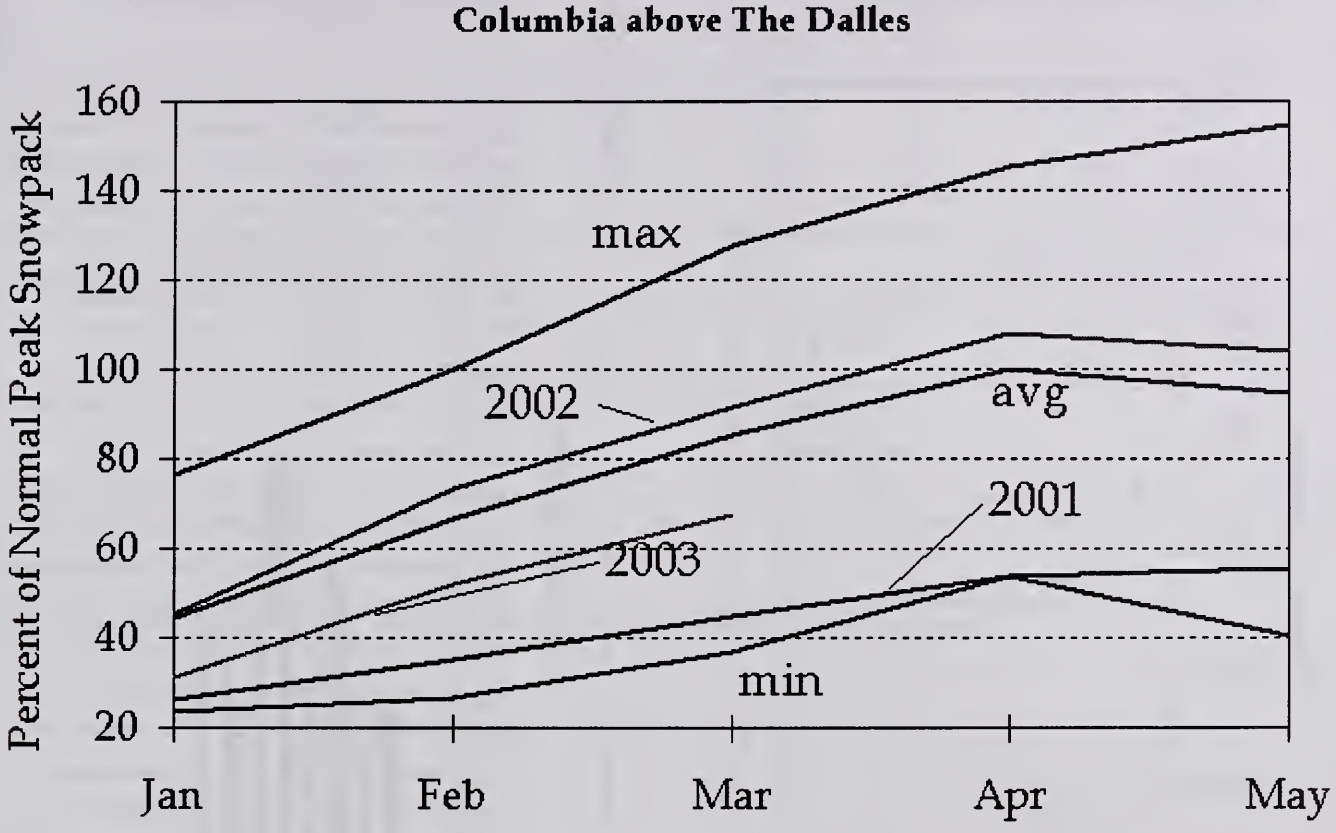
NWCC Anonymous FTP Server:
ftp.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

Washington:
http://www.wa.nrcs.usda.gov/nrcs

NRCS National:
http://www.ftw.nrcs.usda.gov

Columbia Basin Snowpack Summary



March 1, 2003

The Columbia Basin snowpack index increased to 79 percent on March 1, compared to 78 percent on February 1 and 107 percent last year. Looking at the sub-basins above The Dalles, the snowpack above Castlegar increased from 81 percent to 84 percent, above Grand Coulee increased from 78 percent to 81 percent, while the Snake River snowpack above Ice Harbor decreased from 82 percent to 80 percent.

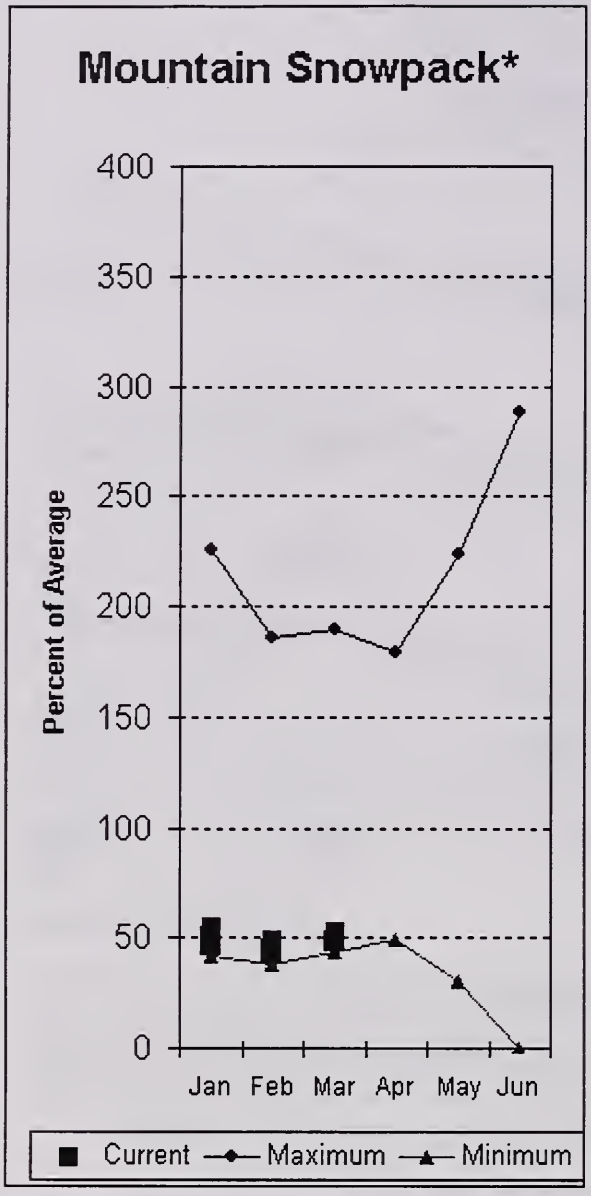
Once again, most areas in the Columbia Basin received much below average precipitation for the month of February. An exception to this trend was a narrow band that stretched from the northeastern Oregon mountains to the Upper Clark Fork Basin. Much above average precipitation was recorded in the upper Clearwater, Bitterroot, and Upper Clark Fork basins.

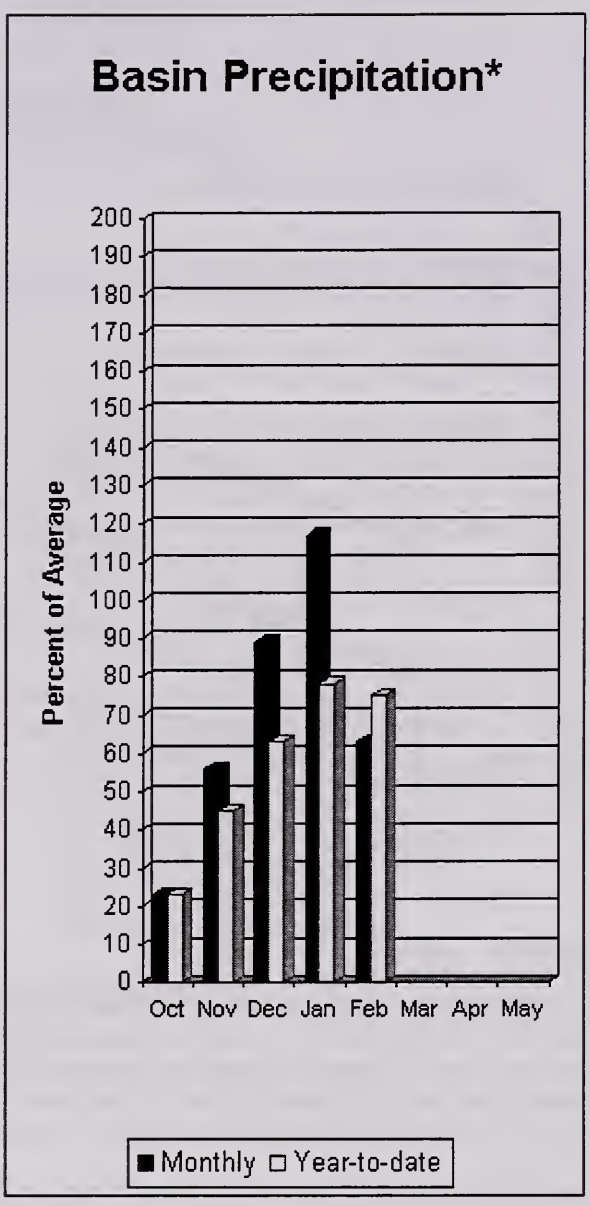
As a highlight, there was a significant increase in the Upper Columbia snowpack in British Columbia, increasing to 94 percent on March 1 from 83 percent on February 1. This is good, since a major portion of the Columbia River runoff emanates from the British Columbia headwaters. There were also increases in the northeastern Oregon mountains (11%) and the Clearwater Basin (3%).

The lowlights include decreased snowpacks in the Kootenai (3%), Kettle (8%), North Cascades (8%), Yakima (7%), Boise-Payette-Southside Snake (8%), and the Salmon (4%) basins.

The percent of peak index at The Dalles increased from 52 percent to 67 percent. However, it will take 326 percent of average snow water equivalent to reach the average peak this year.

Spokane River Basin





*Based on selected stations

The March 1 forecasts for summer runoff within the Spokane River Basin are 58% of average near Post Falls and 61% at Long Lake. The forecast is based on a basin snowpack that is 53% of average and precipitation that is 75% of average for the water year. Precipitation for February was below normal at 63% of average. Streamflow on the Spokane River at Long Lake, was 111% of average for February. March 1 storage in Coeur d'Alene Lake, was 101,700-acre feet, 70% of average and 43% of capacity. Snowpack at Quartz Peak SNOTEL site was 68% of average with 13.2 inches of water content. Average temperatures in the Spokane basin were near normal for February and 2 degrees above for the water year.

For more information contact your local Natural Resources Conservation Service office.

SPOKANE RIVER BASIN
Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SPOKANE near Post Falls (2)	APR-SEP	950	1300	1530	58	1760	2110	2650
	APR-JUL	910	1240	1470	58	1700	2030	2552
SPOKANE at Long Lake (2)	APR-JUL	1060	1450	1710	60	1970	2360	2851
	APR-SEP	1190	1600	1880	61	2160	2570	3072

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	101.7	133.7	144.9

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	19	43	54
NEWMAN LAKE	2	50	59

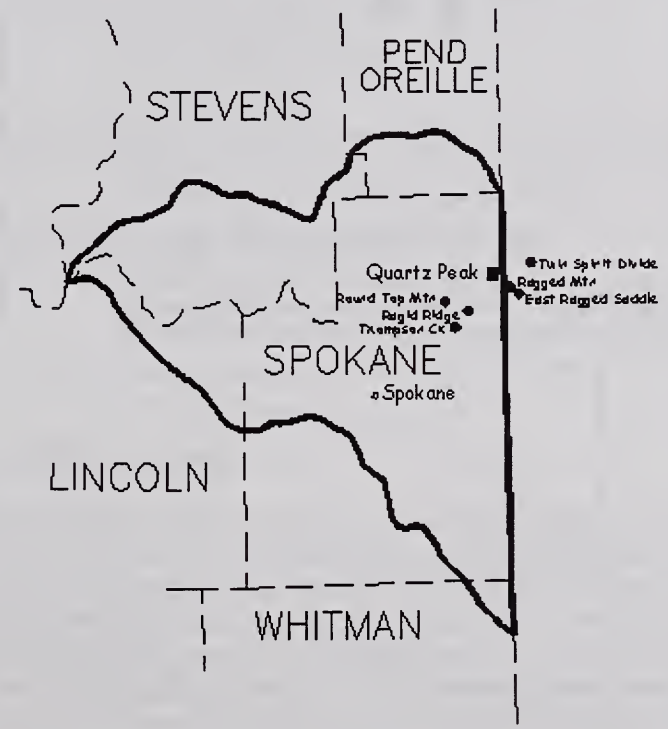
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

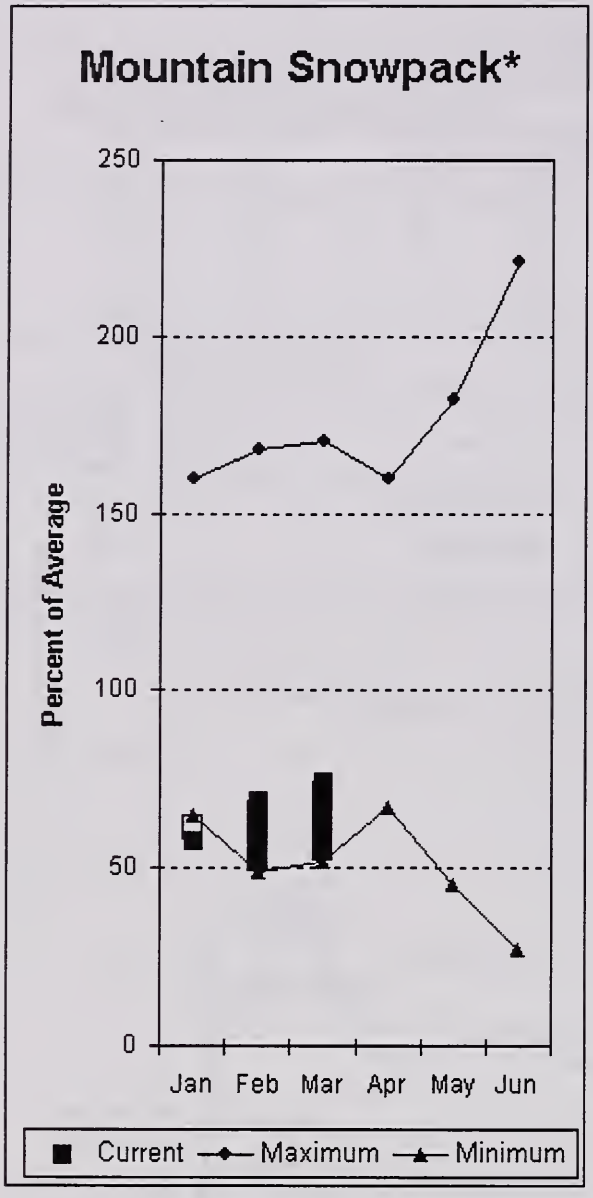
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

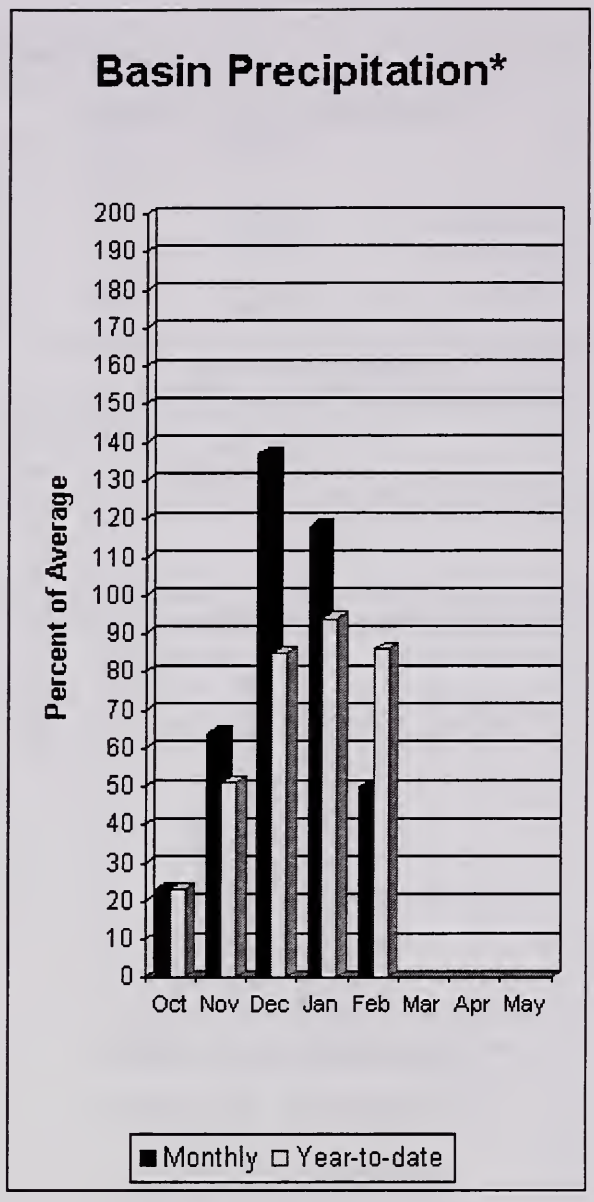
Spokane River Basin
Percent of Average
March 1, 2003

Snowpack - 53%
Precipitation - 75%
Reservoir Capacity - 70%



Colville - Pend Oreille River Basins





*Based on selected stations

The April – September average forecast for the Kettle River streamflow is 75%, Colville at Kettle Falls is 83%, and Priest River near the town of Priest River is 75%. February streamflow was 73% of average on the Pend Oreille River, 67% on the Columbia at Birchbank and 73% on the Kettle River. March 1 snow cover was 74% of average in the Pend Oreille Basin River Basin, 66% in the Colville River Basin and 81% at 6 sites in the Kettle River Basin. Bunchgrass Meadows SNOTEL site had 24.6 inches of snow water on the snow pillow. Normally Bunchgrass would have 24.4 inches on March 1. Precipitation during February was 50% of average, bringing the year-to-date precipitation to 86% of average. Reservoir storage in Roosevelt Lake was reported to be 131% of average and 88% of capacity on March 1. Average temperatures were near normal for February and 2 degrees above for the water year.

For more information contact your local Natural Resources Conservation Service office.

Colville - Pend Oreille River Basins

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
PEND OREILLE Lake Inflow (2)	APR-JUL	6290	7700	8660	68	9620	11030	12700
	APR-SEP	6860	8410	9460	68	10510	12060	13900
PRIEST near Priest River (1,2)	APR-JUL	470	565	610	75	655	750	814
	APR-SEP	420	580	650	75	720	880	868
PEND OREILLE bl Box Canyon (2)	APR-JUL	6650	7900	8750	68	9600	10850	12900
	APR-SEP	6950	8500	9550	68	10600	12150	14100
CHAMOKANE CREEK near Long Lake	MAY-AUG	3.1	5.4	7.0	69	8.6	10.9	10.2
COLVILLE at Kettle Falls	APR-SEP	79	102	117	83	132	156	141
	APR-JUL	71	92	106	83	120	141	128
KETTLE near Laurier	APR-SEP	1160	1340	1470	75	1600	1780	1972
	APR-JUL	1120	1290	1400	75	1510	1680	1874
COLUMBIA at Birchbank (1,2)	APR-JUL	21570	25029	26600	76	28170	31630	34900
	APR-SEP	26801	31133	33100	76	35070	39400	43500
COLUMBIA at Grand Coulee Dm (1,2)	APR-SEP	36643	43697	46900	73	50100	57160	63990
	APR-JUL	30800	36714	39400	73	42090	48000	53850

COLVILLE - PEND OREILLE RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROOSEVELT	5232.0	4622.2	2744.0	3523.9
BANKS		NO REPORT		

COLVILLE - PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	1	54	66
PEND OREILLE RIVER	11	71	67
KETTLE RIVER	7	85	81

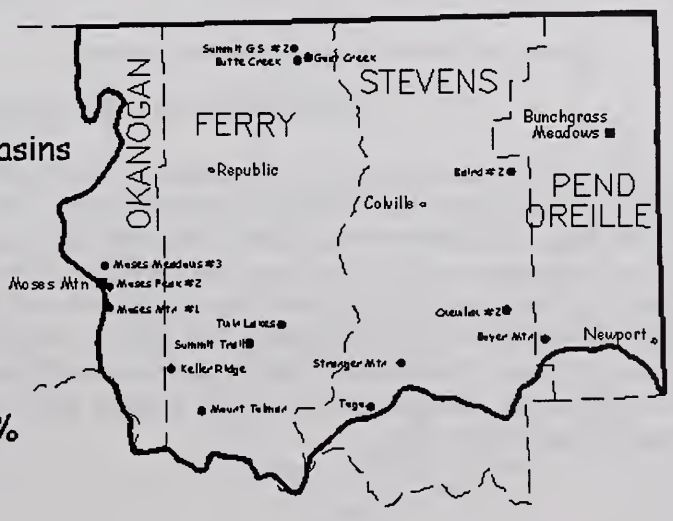
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

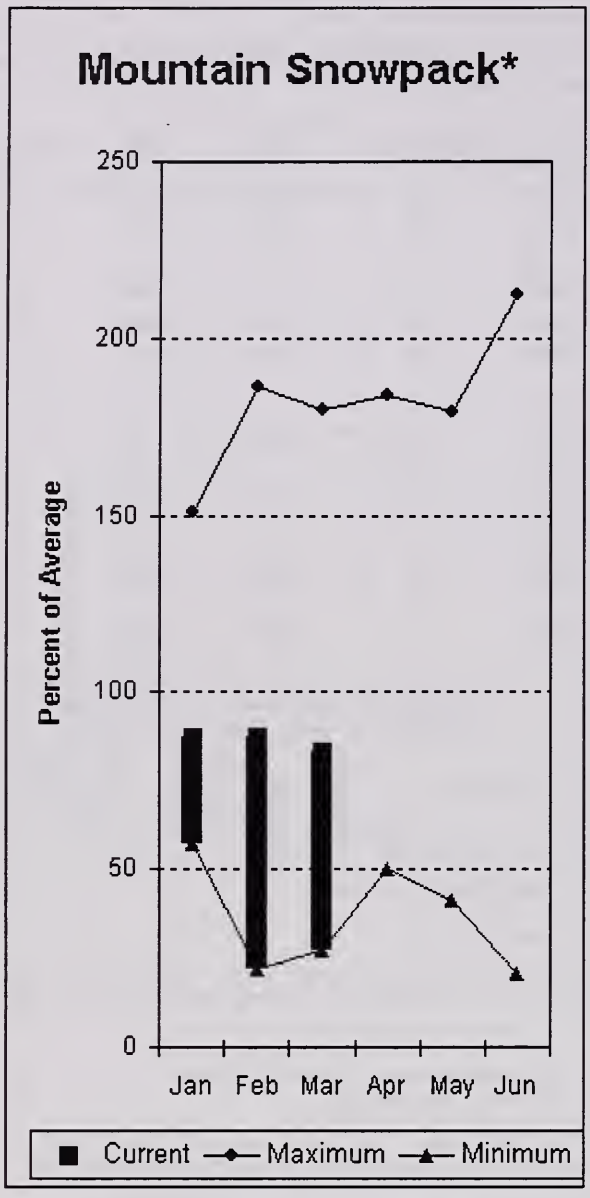
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

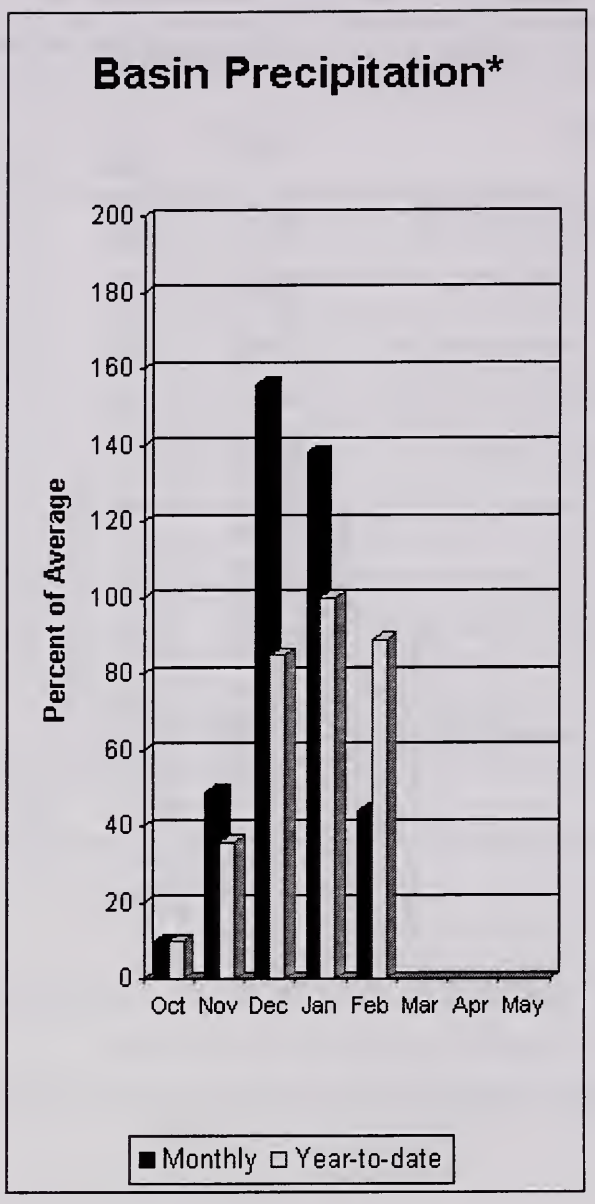
Colville-Pend Oreille River Basins
Percent of Average
March 1, 2003

Snowpack - 74%
Precipitation - 86%
Reservoir Capacity - 131%



Okanogan - Methow River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 61%, Similkameen River is 57%, Methow River is 62%, Salmon Creek is 93% and Beaver Creek is 93%. March 1 snow cover on the Okanogan was 71% of average and Methow was 72%. February precipitation in the Okanogan-Methow was 44% of average, with precipitation for the water year at 89% of average. February streamflow for the Methow River was 66% of average, 52% for the Okanogan River and 68% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 9.8 inches. Average for this site is 10.1 inches on March 1. Combined storage in the Conconully Reservoirs was 6,800-acre feet, which is 29% of capacity and 40% of the March 1 average. Temperatures were 3 degrees above normal for the past month and 3 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SIMILKAMEEN near Nighthawk (1)	APR-JUL	440	680	785	58	890	1125	1350
	APR-SEP	425	700	825	57	945	1225	1450
OKANOGAN near Tonasket (1)	APR-JUL	365	780	970	61	1160	1580	1580
	APR-SEP	475	890	1080	61	1270	1690	1766
SALMON CREEK near Conconully	APR-JUL	5.8	13.4	18.6	93	24	31	20
	APR-SEP	6.2	14.1	19.5	93	25	33	21
BEAVER CREEK below SF near Twisp	APR-SEP	6.4	9.3	11.2	93	13.1	16.0	12.1
	APR-JUL	5.6	8.4	10.3	93	12.2	15.0	11.1
METHOW RIVER near Pateros	APR-SEP	360	510	610	62	710	865	985
	APR-JUL	440	515	565	62	615	690	911

OKANOGAN - METHOW RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	3.1	3.4	8.4
CONCONULLY RESERVOIR	13.0	3.7	3.3	8.7

OKANOGAN - METHOW RIVER BASINS
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	22	68	71
OMAK CREEK	3	83	90
SANPOIL RIVER	2	86	77
SIMILKAMEEN RIVER	4	52	46
TOATS COULEE CREEK	1	139	115
CONCONULLY LAKE	3	113	105
METHOW RIVER	5	71	72

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

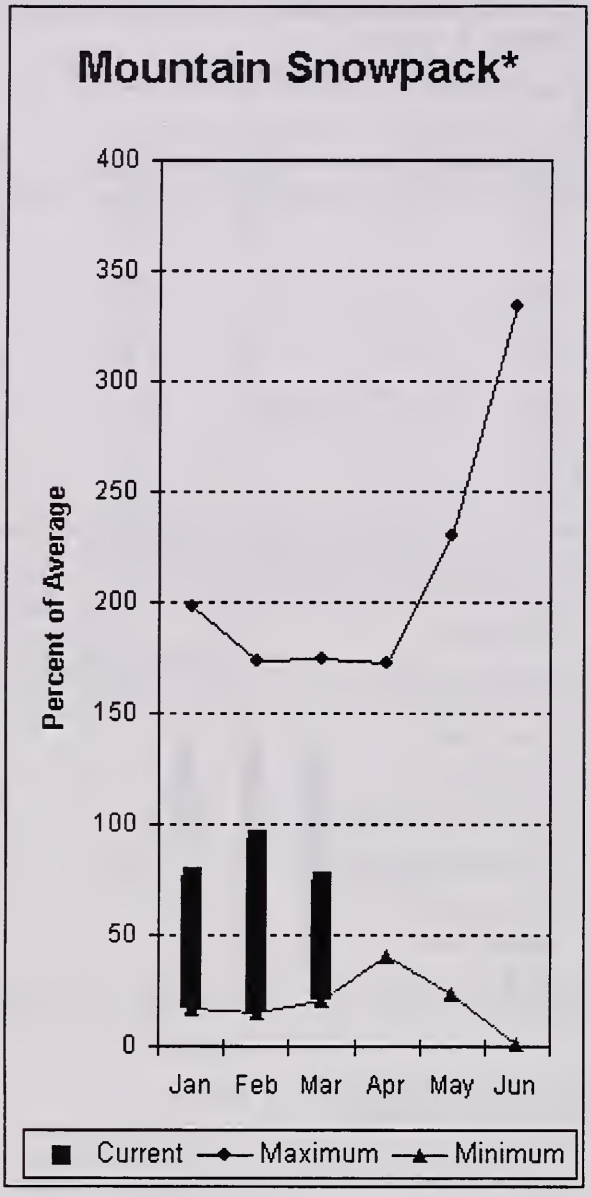
The average is computed for the 1971-2000 base period.

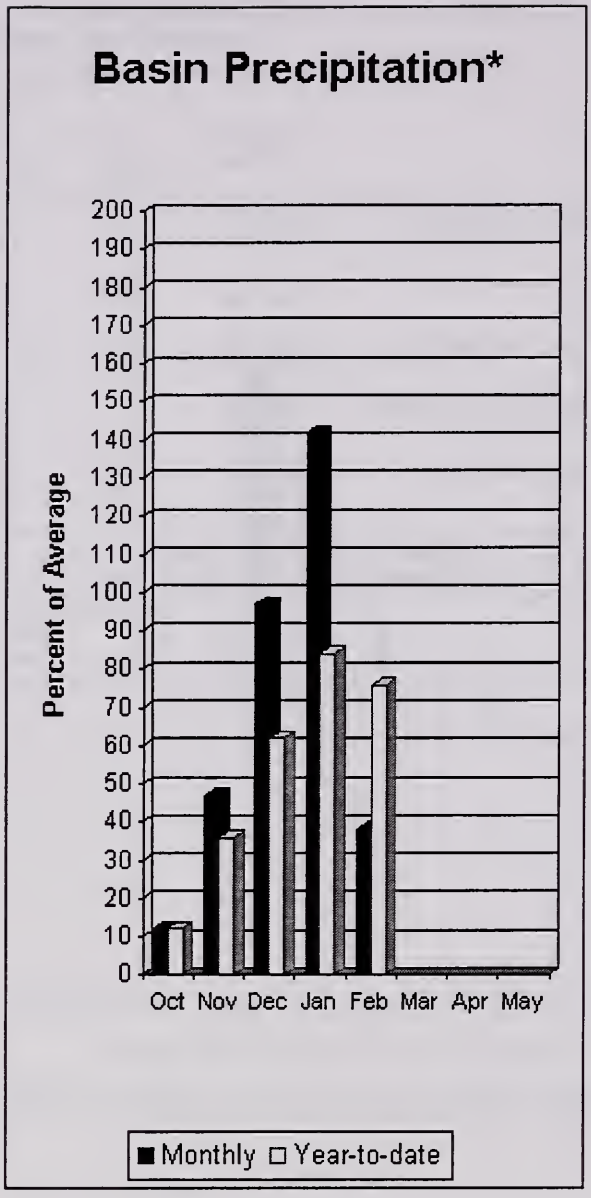
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Okanogan-Methow River Basins
Percent of Average
March 1, 2003

Snowpack - 83%
Precipitation - 89%
Reservoir Capacity - 40%

Wenatchee - Chelan River Basins





*Based on selected stations

Precipitation during February was 38% of average in the basin and 76% for the year-to-date. Runoff for Entiat River is forecast to be 71% of average for the summer. The April-September average forecast for Chelan River is 68%, Wenatchee River at Plain is 63% and Stehekin is 70%. Icicle, Stemilt and Squilchuck creeks are all expected to fall into the same forecast range. February average streamflows on the Chelan River were 75% and on the Wenatchee River 111%. March 1 snowpack in the Wenatchee River Basin was 69% of average; the Chelan, 68%; the Entiat, 87%; Stemilt Creek, 93% and Colockum Creek, 134% at Trough SNOTEL site. Reservoir storage in Lake Chelan was 276,500-acre feet, 111% of March 1 average and 41% of capacity. Lyman Lake SNOTEL had the most snow water with 40.8 inches of water. This site would normally have 55.1 inches on March 1. Temperatures were 2 degrees above normal for February and 2 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CHELAN RIVER near Chelan	APR-SEP	640	740	805	68	870	965	1185
	APR-JUL	575	655	710	68	765	845	1046
STEHEKIN near STEHEKIN	APR-SEP	470	535	580	70	625	690	827
	APR-JUL	405	455	490	70	525	575	699
ENTIAT RIVER near Ardenvoir	APR-SEP	138	156	169	71	182	200	238
	APR-JUL	128	145	156	72	167	184	216
WENATCHEE at Plain	APR-SEP	590	685	750	63	815	910	1198
	APR-JUL	555	625	675	63	725	795	1078
WENATCHEE R. at Peshastin	APR-SEP	679	930	1100	67	1270	1520	1635
	APR-JUL	508	795	990	67	1185	1470	1481
STEMILT nr Wenatchee (miners in)	MAY-SEP	46	72	90	65	108	134	138
ICICLE CREEK near Leavenworth	APR-SEP	190	210	225	65	240	260	345
	APR-JUL	180	195	210	66	225	240	318
COLUMBIA R. bl Rock Island Dam (2)	APR-SEP	41856	47301	51000	73	54700	60140	69540
	APR-JUL	33506	39278	43200	73	47120	52890	59020

WENATCHEE - CHELAN RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	276.5	265.3	250.1

WENATCHEE - CHELAN RIVER BASINS
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CHELAN LAKE BASIN	5	59	68
ENTIAT RIVER	2	113	87
WENATCHEE RIVER	12	71	69
SQUILCHUCK CREEK	0	0	0
STEMILT CREEK	2	114	93
COLOCKUM CREEK	1	151	134

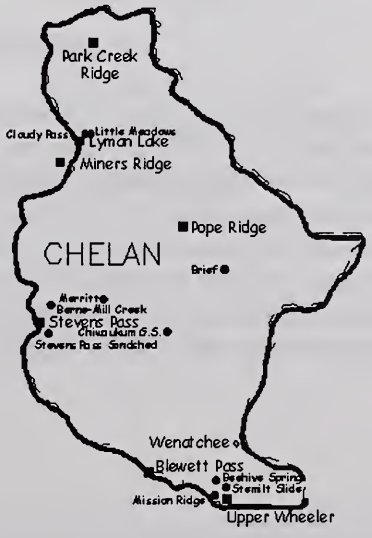
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

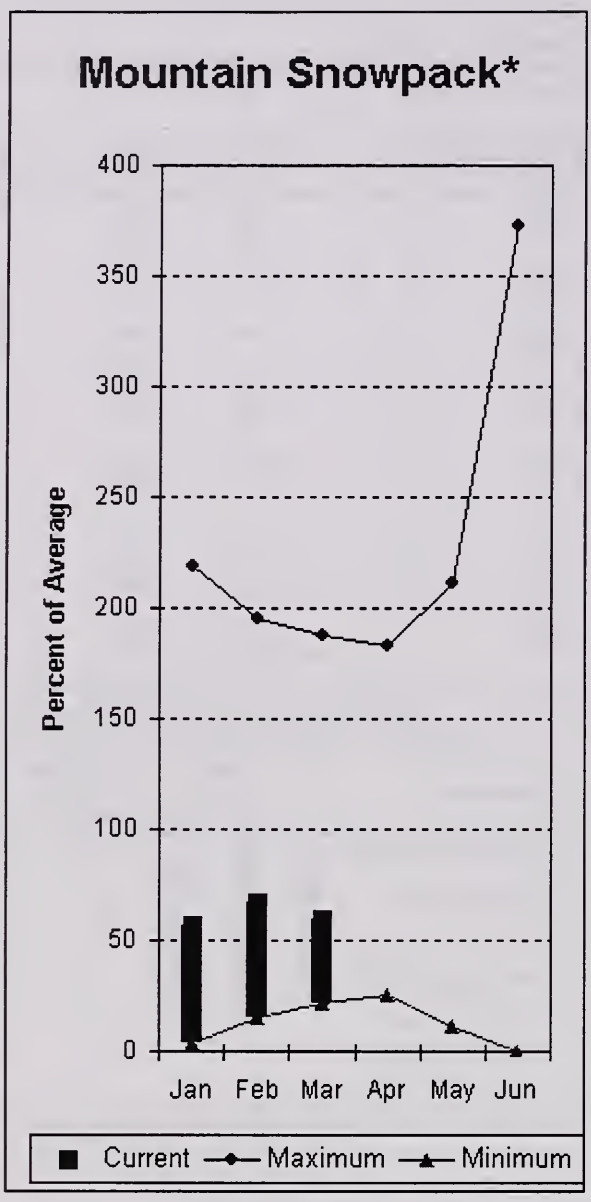
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

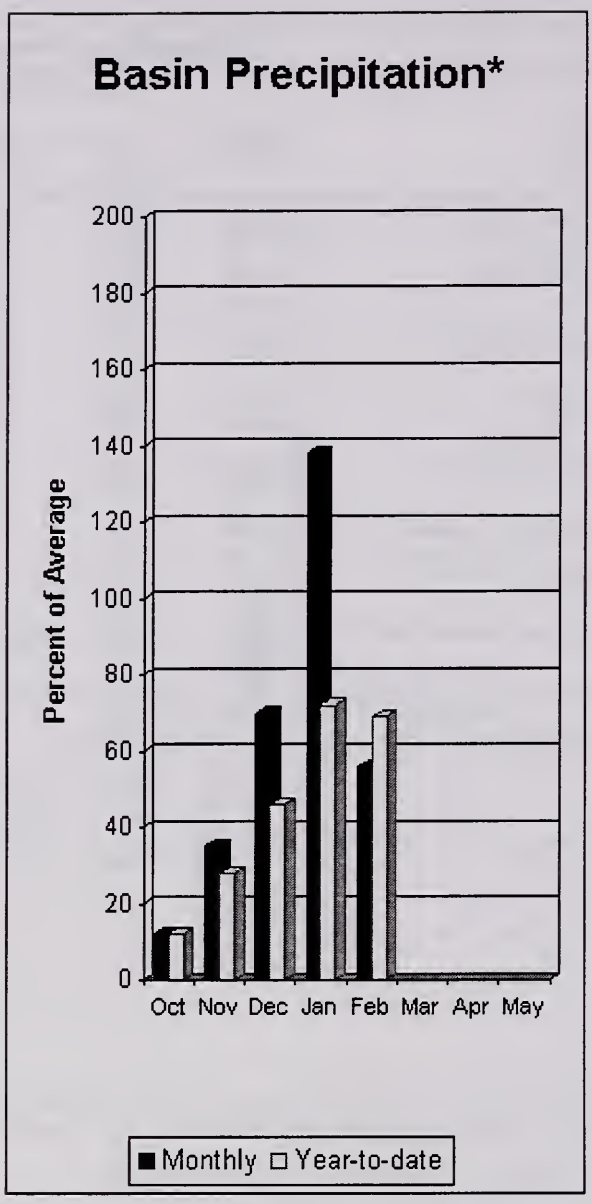
Wenatchee-Chelan River Basins
Percent of Average
March 1, 2003

Snowpack - 75%
Precipitation - 76%
Reservoir Capacity - 111%



Upper Yakima River Basin





*Based on selected stations

March 1 reservoir storage for the Upper Yakima reservoirs was 424,300-acre feet, 85% of average. Forecasts for the Yakima River at Cle Elum are 61% of average and the Teanaway River near Cle Elum is at 63%. Lake inflows are all forecasted to fall into the same range this summer. February streamflows within the basin were Yakima near Cle Elum at 121% and Cle Elum River near Roslyn at 126%. March 1 snowpack was 59% based upon 10 snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 56% of average for February and 69% year-to-date for water. Volume forecasts for the Yakima Basin are for natural flow. As such, they March differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
KEECHELUS LAKE INFLOW	APR-JUL	53	65	73	60	81	93	121
	APR-SEP	56	70	80	60	90	104	133
KACHESS LAKE INFLOW	APR-JUL	48	59	67	60	75	86	111
	APR-SEP	53	65	73	61	81	93	120
CLE ELUM LAKE INFLOW	APR-JUL	210	235	250	61	265	290	408
	APR-SEP	225	255	275	61	295	325	448
YAKIMA at Cle Elum	APR-JUL	410	465	500	61	535	590	822
	APR-SEP	445	510	550	61	590	655	903
TEANAWAY near Cle Elum	APR-JUL	74	83	90	63	97	106	143
	APR-SEP	76	85	92	63	99	108	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	53.0	87.7	102.4
KACHESS	239.0	151.8	100.3	154.7
CLE ELUM	436.9	219.5	177.4	241.4

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
UPPER YAKIMA RIVER	10	55	59

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

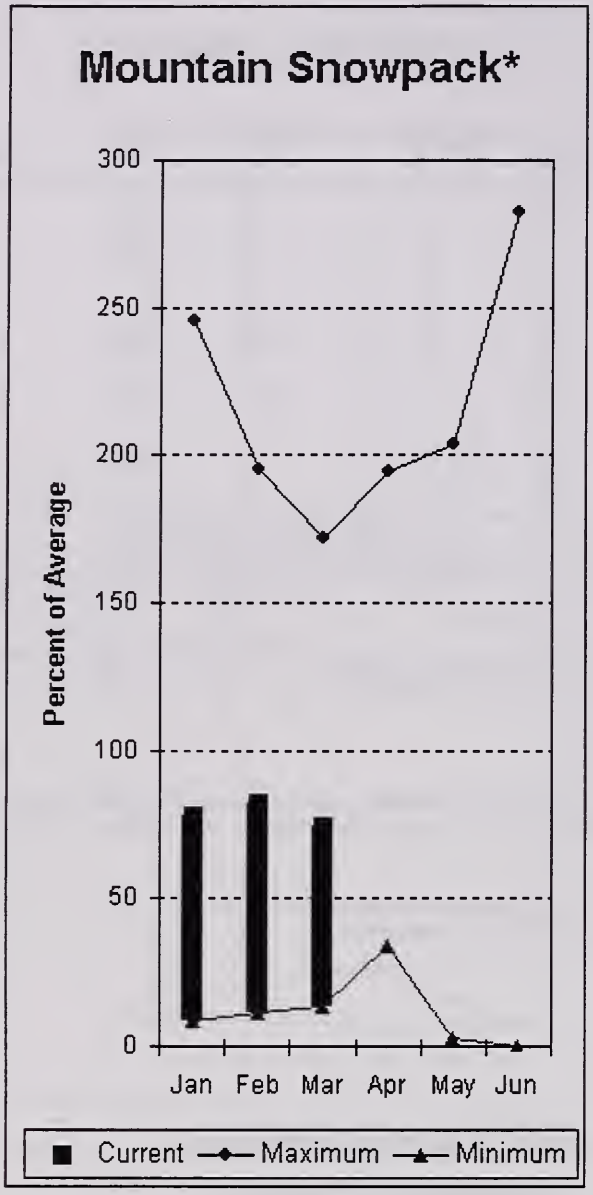
The average is computed for the 1971-2000 base period.

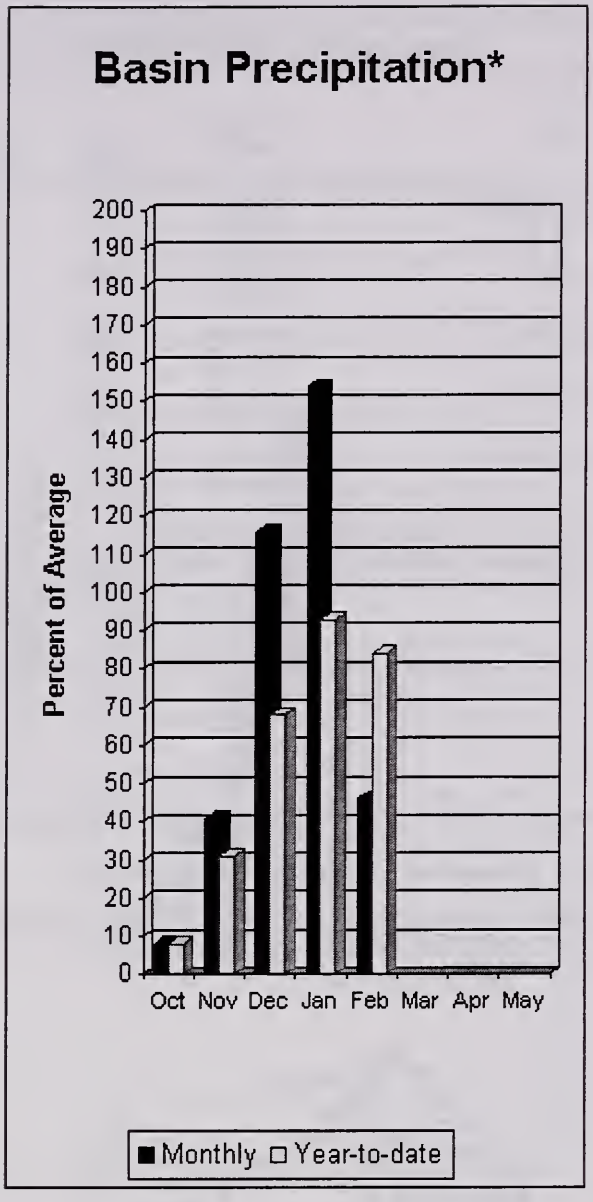
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Upper Yakima River Basin
Percent of Average
March 1, 2003

Snowpack - 59%
Precipitation - 69%
Reservoir Capacity - 85%

Lower Yakima River Basin





*Based on selected stations

February average streamflows within the basin were: Yakima River near Parker, 134%; Naches River near Naches, 122%; and Yakima River at Kiona, 129%. March 1 reservoir storage for Bumping and Rimrock reservoirs was 157,300-acre feet, 114% of average. Forecast averages for Yakima River near Parker are 65%; American River near Nile, 75%; Ahtanum Creek, 67%; and Klickitat River near Glenwood, 58%. March 1 snowpack was 73% based upon 8 snow courses and SNOTEL readings within the Lower Yakima Basin. Precipitation was 46% of average for February and 84% year-to-date for water. Temperatures were 2-3 degrees above normal for the month and 2 degrees above average for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they March differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
BUMPING LAKE INFLOW	APR-SEP	77	91	100	75	109	123	134
	APR-JUL	70	83	91	75	99	112	122
AMERICAN RIVER near Nile	APR-SEP	73	83	89	75	95	105	118
	APR-JUL	67	76	82	76	88	97	108
RIMROCK LAKE INFLOW	APR-SEP	139	160	175	72	190	211	242
	APR-JUL	120	136	147	72	158	174	204
NACHES near Naches	APR-SEP	480	550	600	72	650	720	837
	APR-JUL	430	495	540	71	585	650	758
AHTANUM CREEK nr Tampico (2)	APR-SEP	13.3	24	31	67	38	49	46
	APR-JUL	11.8	21	28	67	35	44	42
YAKIMA near Parker	APR-SEP	980	1140	1250	65	1360	1520	1918
	APR-JUL	900	1040	1130	65	1220	1360	1731
KLICKITAT near Glenwood	APR-JUN	54	67	75	58	83	96	129
	APR-SEP	66	83	95	58	107	124	163

LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	21.2	17.1	11.5
RIMROCK	198.0	136.1	99.1	126.1

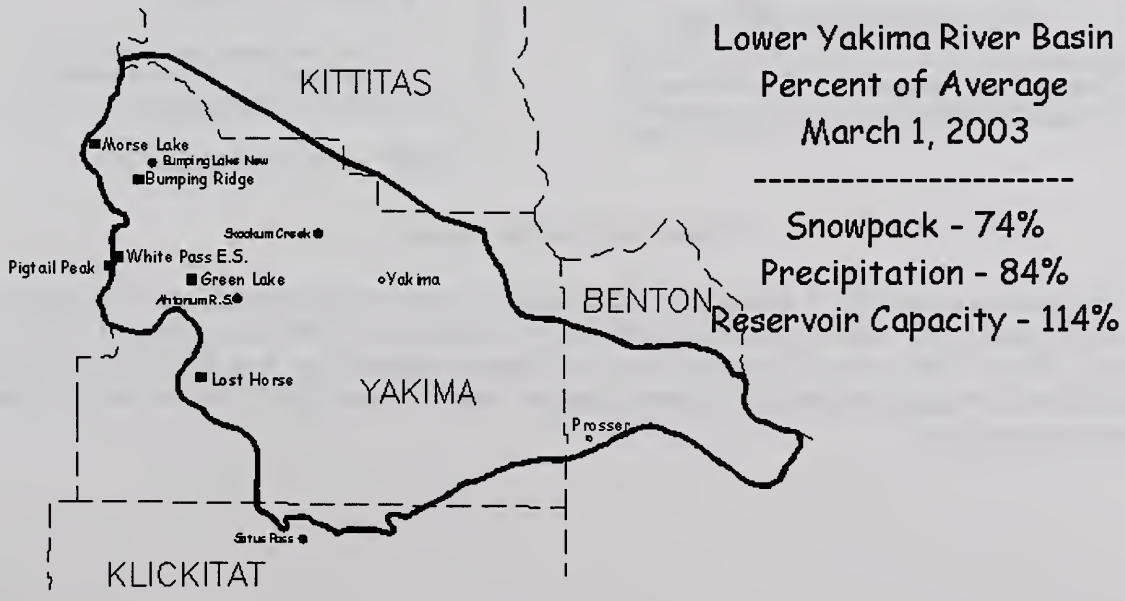
LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average

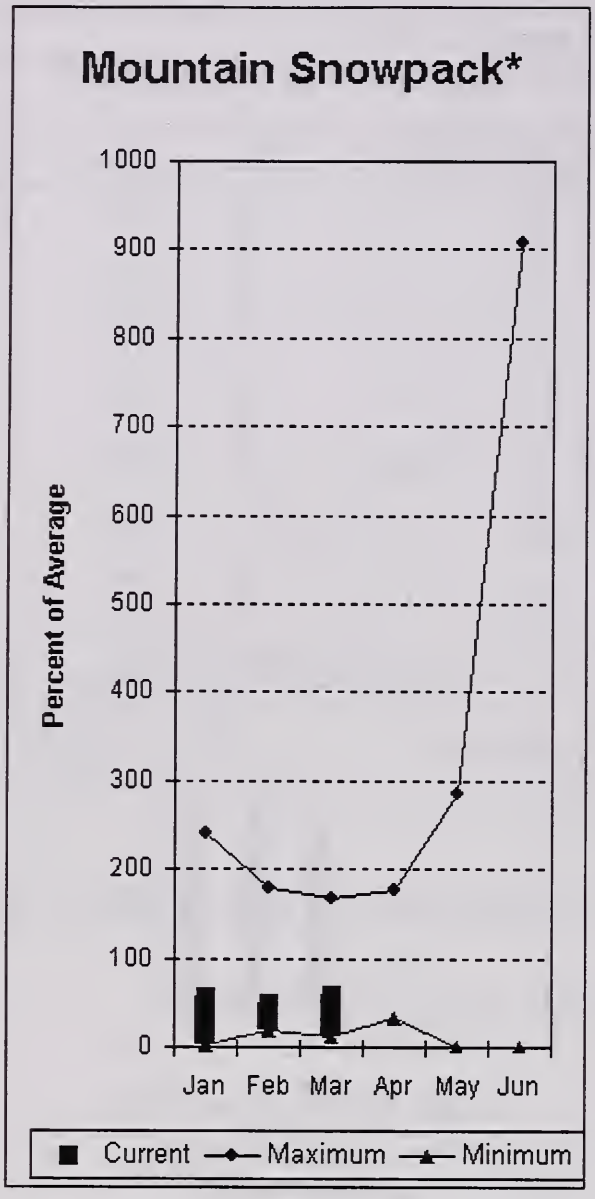
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

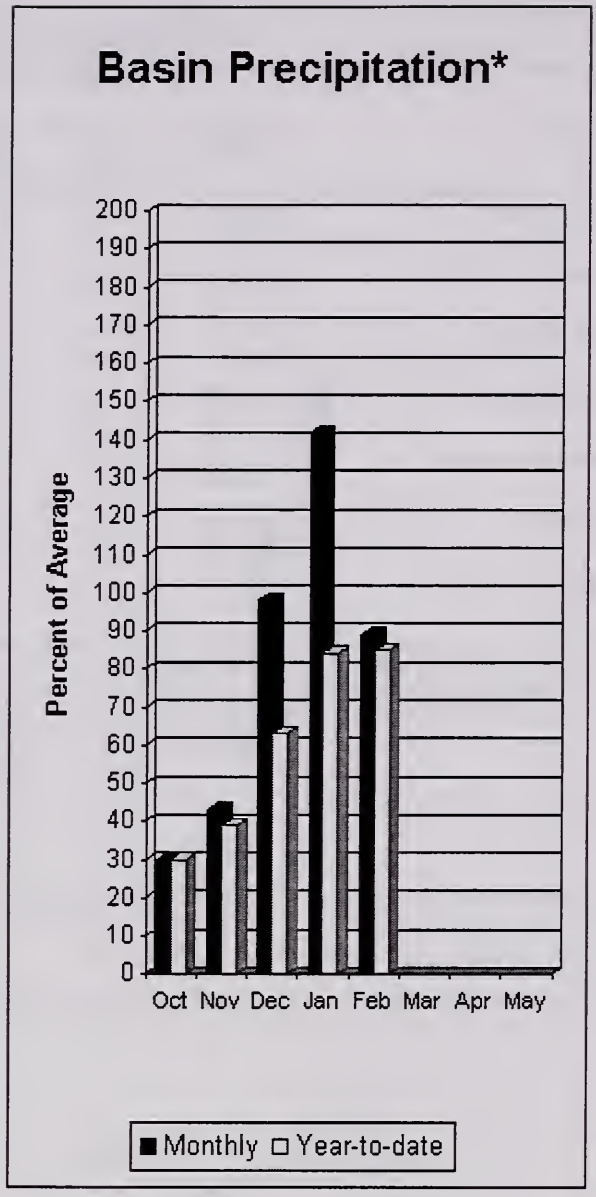
The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.



Walla Walla River Basin





*Based on selected stations

February precipitation was 89% of average, maintaining the year-to-date precipitation at 85% of average. Snowpack in the basin was 58% of average. Streamflow forecasts are 50% of average for Mill Creek and 71% for the SF Walla Walla near Milton-Freewater. February streamflow was 168% of average for the Walla Walla River. Average temperatures were 1 degree below normal for February and 1 degree above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
MILL CREEK at Walla Walla	APR-SEP	1.7	6.1	9.1	50	12.1	16.5	18.4
	APR-JUL	1.6	6.0	9.0	50	12.0	16.4	18.2
SF WALLA WALLA near Milton-Freewater	APR-JUL	28	34	38	72	42	48	53
	APR-SEP	36	42	47	71	52	58	66

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WALLA WALLA RIVER	2	48	58

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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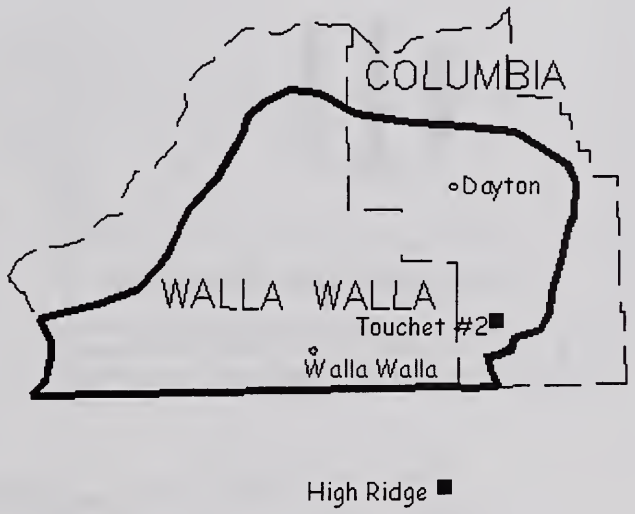
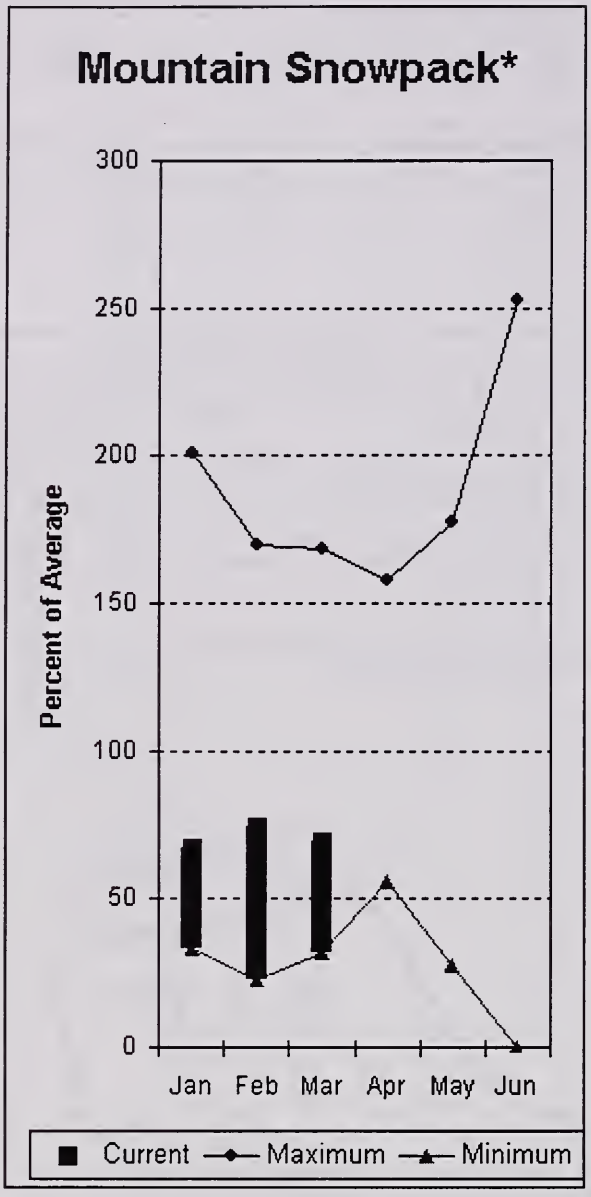
(2) - The value is natural volume - actual volume may be affected by upstream water management.

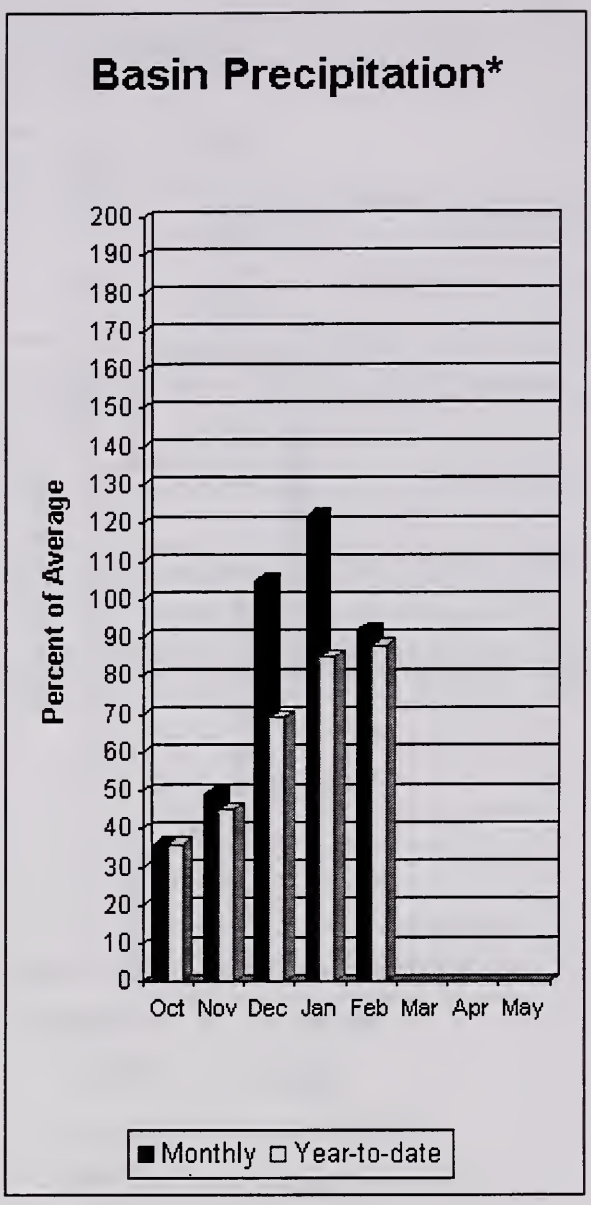
Walla Walla River Basin
Percent of Average
March 1, 2003

Snowpack - 58%
Precipitation - 85%



Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 72% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 69% and 76% of normal respectively. February precipitation was 82% of average, bringing the year-to-date precipitation to 88% of average. March 1 snowpack readings averaged 69% of normal. February streamflow was 86% of average for Snake River below Lower Granite Dam and 82% for Grande Ronde River near Troy. Average temperatures were 1 degree below normal for February and 1 degree above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
GRANDE RONDE at Troy (1)	MAR-JUL	760	1063	1200	76	1337	1640	1578
	APR-SEP	641	915	1040	76	1165	1440	1372
CLEARWATER at Spalding (1,2)	APR-JUL	2890	4540	5290	71	6040	7690	7435
	APR-SEP	3210	4860	5610	72	6360	8010	7850
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	7430	12429	14700	68	16970	21970	21550
	APR-SEP	8331	13949	16500	69	19050	24670	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LOWER SNAKE, GRANDE RONDE	16	64	69

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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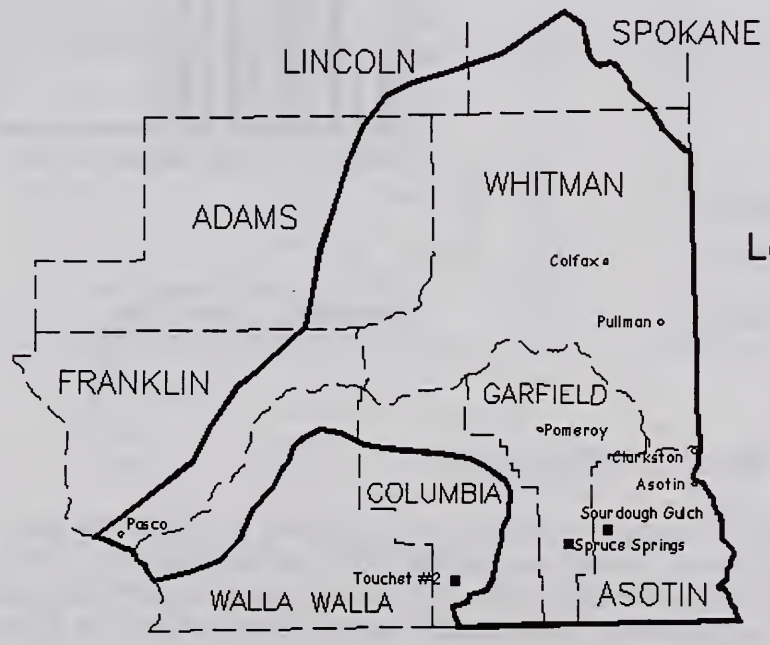
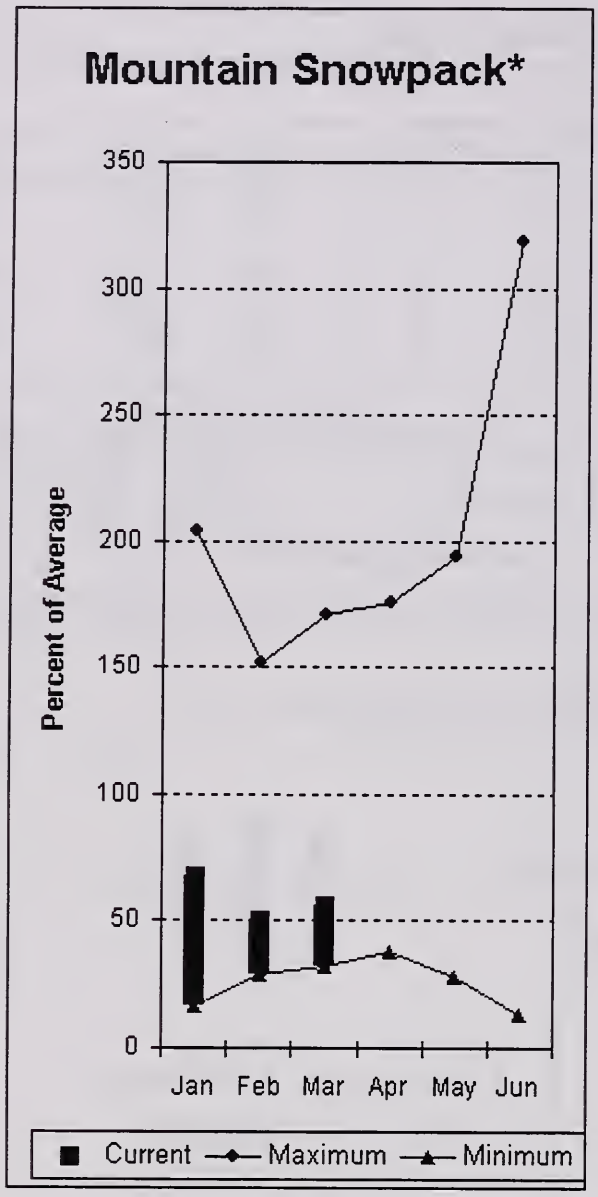
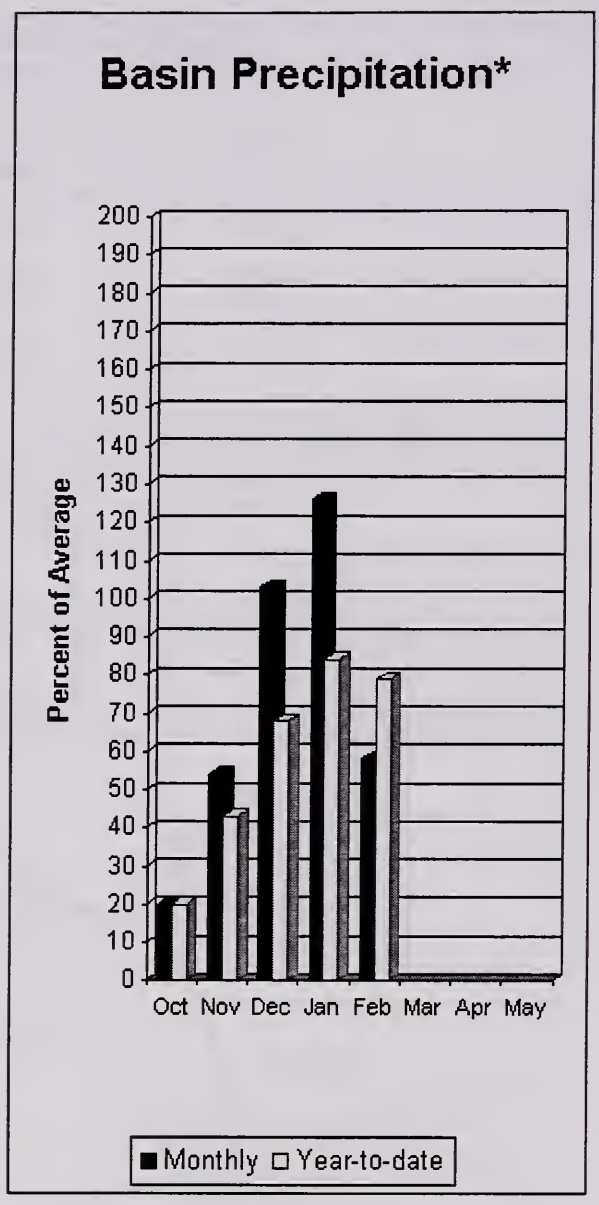


Lower Snake River Basin
Percent of Average
March 1, 2003

Snowpack - 69%
Precipitation - 88%

Cowlitz - Lewis River Basins





*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 70% and Cowlitz River at Castle Rock, 71% of average. February average streamflow for Cowlitz River was 133% and 115% for Lewis River. The Columbia River at the Dalles was 84% of average. February precipitation was 58% of average and the water-year average was 79%. March 1 snow cover for Cowlitz River was 61%, and Lewis River was 52% of average. Average temperatures were near normal during February and have averaged 2 degrees above throughout the water year.

For more information contact your local Natural Resources Conservation Service office.

Cowlitz - Lewis River Basins

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
LEWIS at Ariel (2)	APR-JUL	441	610	725	70	840	1009	1031
	APR-SEP	534	707	825	70	943	1116	1176
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	410	982	1370	71	1758	2330	1922
	APR-JUL	244	813	1200	71	1587	2156	1692
COWLITZ R. at Castle Rock (2)	APR-SEP	532	1335	1880	71	2425	3228	2639
	APR-JUL	826	1311	1640	72	1969	2454	2279
KLICKITAT near Glenwood	APR-JUN	54	67	75	58	83	96	129
	APR-SEP	66	83	95	58	107	124	163
COLUMBIA R. at The Dalles (2)	APR-SEP	53888	61993	67500	68	73010	81110	98650
	APR-JUL	42241	51505	57800	68	64090	73360	84650

COWLITZ - LEWIS RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

COWLITZ - LEWIS RIVER BASINS
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	4	31	52
COWLITZ RIVER	6	53	61

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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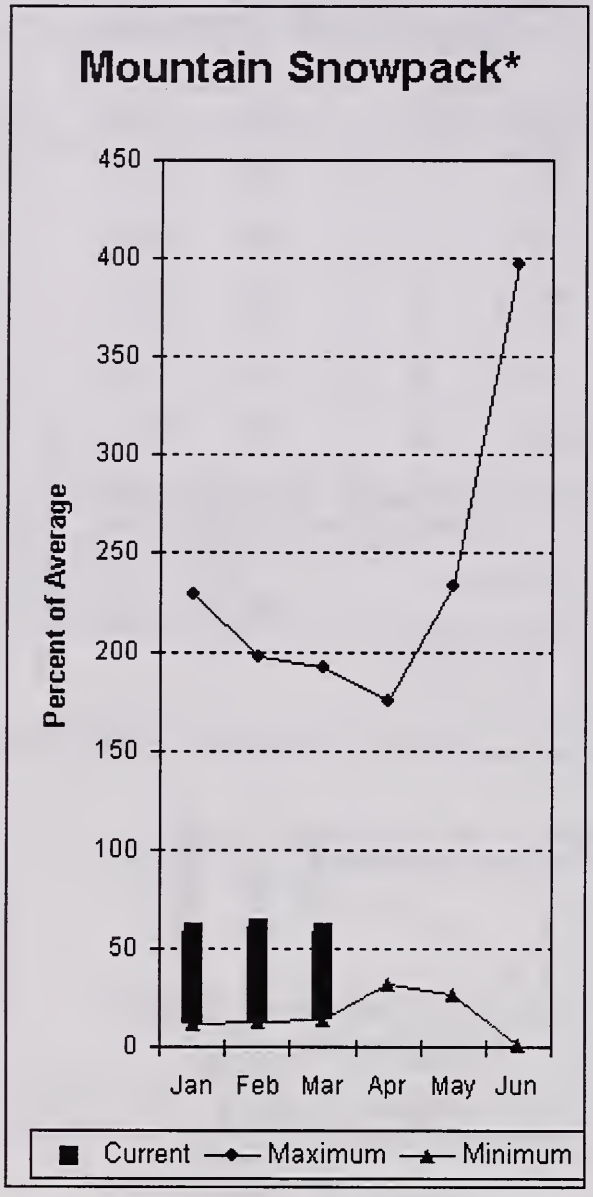
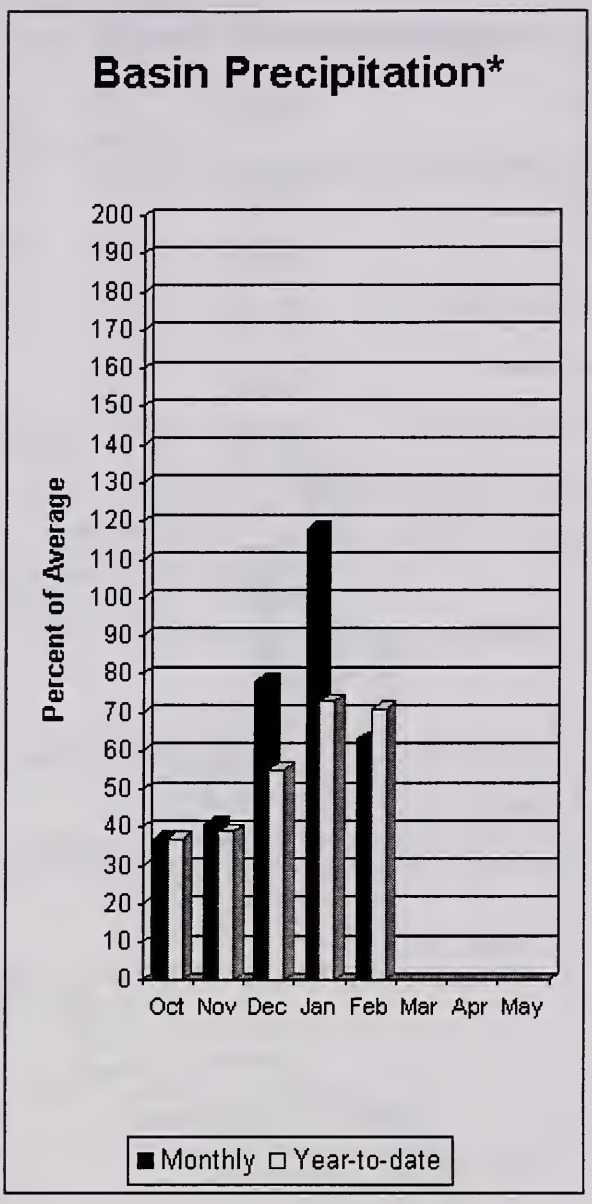
Cowlitz-Lewis River Basins
Percent of Average
March 1, 2003

Snowpack - 56%
Precipitation - 79%

White - Green River Basins





*Based on selected stations

Summer runoff is forecast to be 69% of normal for the Green River below Howard Hanson Dam and 71% for the White River near Buckley. March 1 snowpack was 74% of average in both White River and Puyallup River basins and 42% in Green River Basin. Water content on March 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 20.9 inches. This site has a March 1 average of 29.5 inches. February precipitation was 63% of average, bringing the water year-to-date to 71% of average for the basins. Average temperatures in the area were 1 degree below normal last month and 1 degrees above for the water-year.

For more information contact your local Natural Resources Conservation Service office.

White - Green - Puyallup River Basins

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
WHITE near Buckley (1,2)	APR-JUL	223	286	315	72	344	407	440
	APR-SEP	270	346	380	71	414	490	534
GREEN below Howard Hanson (1,2)	APR-JUL	96	147	170	70	193	244	243
	APR-SEP	106	160	185	69	210	264	268

WHITE - GREEN - PUYALLUP RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WHITE - GREEN - PUYALLUP RIVER BASINS
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	67	74
GREEN RIVER	7	36	42
PUYALLUP RIVER	3	67	74

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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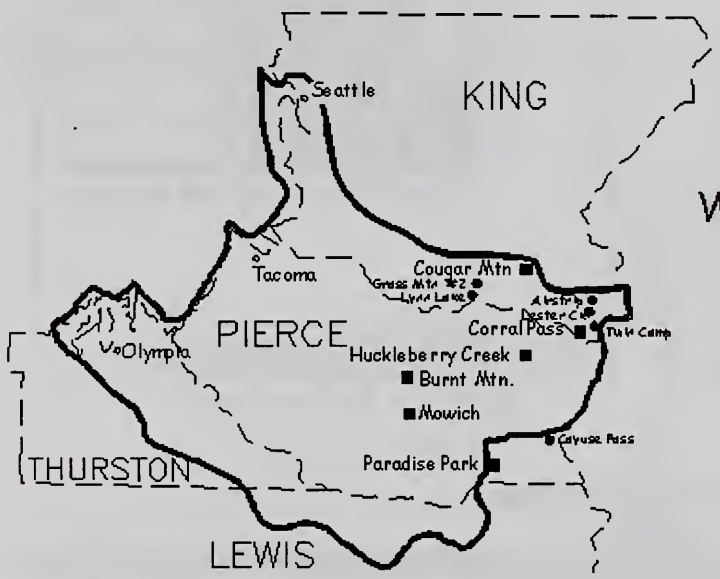
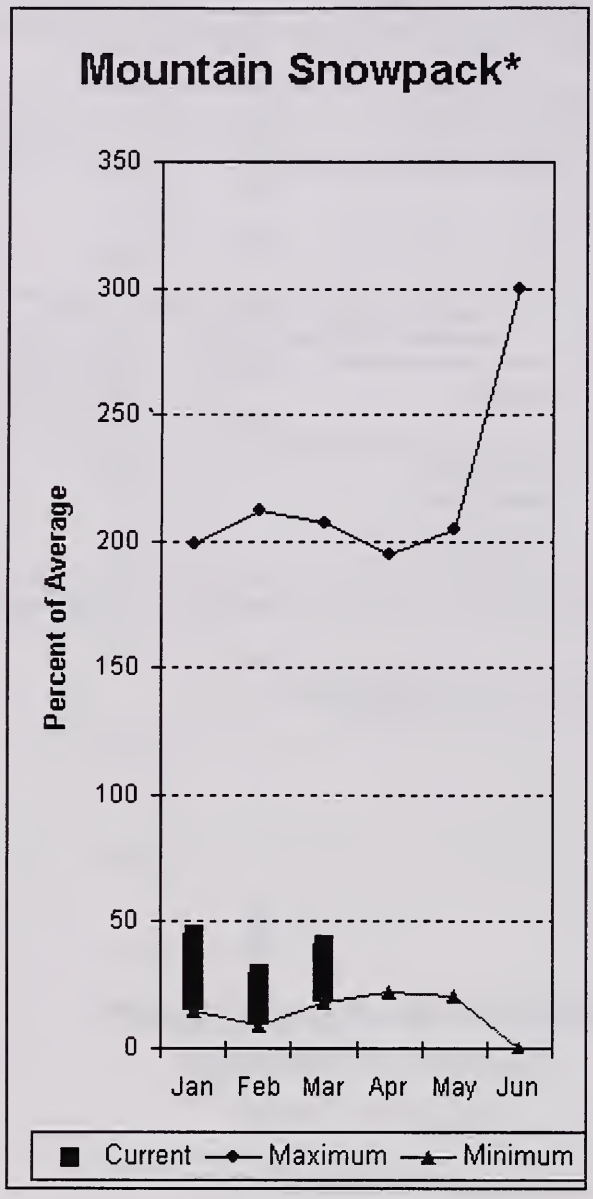
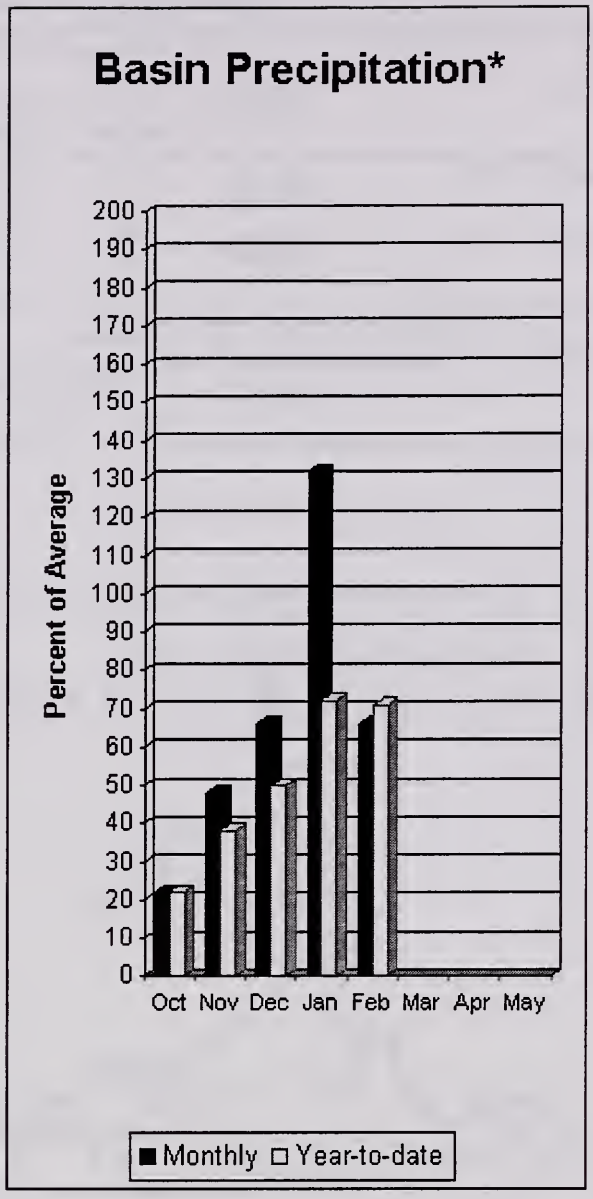


White-Green-Puyallup Basins
Percent of Average
March 1, 2003

Snowpack - 58%
Precipitation - 71%

Central Puget Sound River Basins





*Based on selected stations

Forecast for spring and summer flows are: 68% for Cedar River near Cedar Falls; 68% for Rex River; 68% for South Fork of the Tolt River; and 69% for Cedar River at Cedar Falls. Basin-wide precipitation for February was 66% of average, bringing water-year-to-date to 71% of average. March 1 average snow cover in Cedar River Basin was 43%, Tolt River Basin was 32%, Snoqualmie River Basin was 46%, and Skykomish River Basin was 45%. Olallie Meadows SNOTEL site at 3960 feet, had 27.3 inches of water content. Average March 1 water content is 48.9 inches at Olallie Meadows. February temperatures were 1-2 degrees below average for the past month and 1 degrees above normal for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<======= Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CEDAR near Cedar Falls	APR-JUL	32	43	50	69	57	68	73
	APR-SEP	35	46	54	68	62	73	80
REX near Cedar Falls	APR-JUL	8.9	13.7	17.0	68	20	25	25
	APR-SEP	10.2	15.4	19.0	68	23	28	28
CEDAR RIVER at Cedar Falls	APR-JUL	29	42	51	69	60	73	74
	APR-SEP	28	41	50	69	59	72	73
SOUTH FORK TOLT near Index	APR-JUL	7.4	9.0	10.0	68	11.0	12.6	14.7
	APR-SEP	8.1	10.1	11.4	68	12.7	14.7	16.9

CENTRAL PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	4	29	43
TOLT RIVER	3	15	32
SNOQUALMIE RIVER	6	30	46
SKYKOMISH RIVER	4	29	45

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

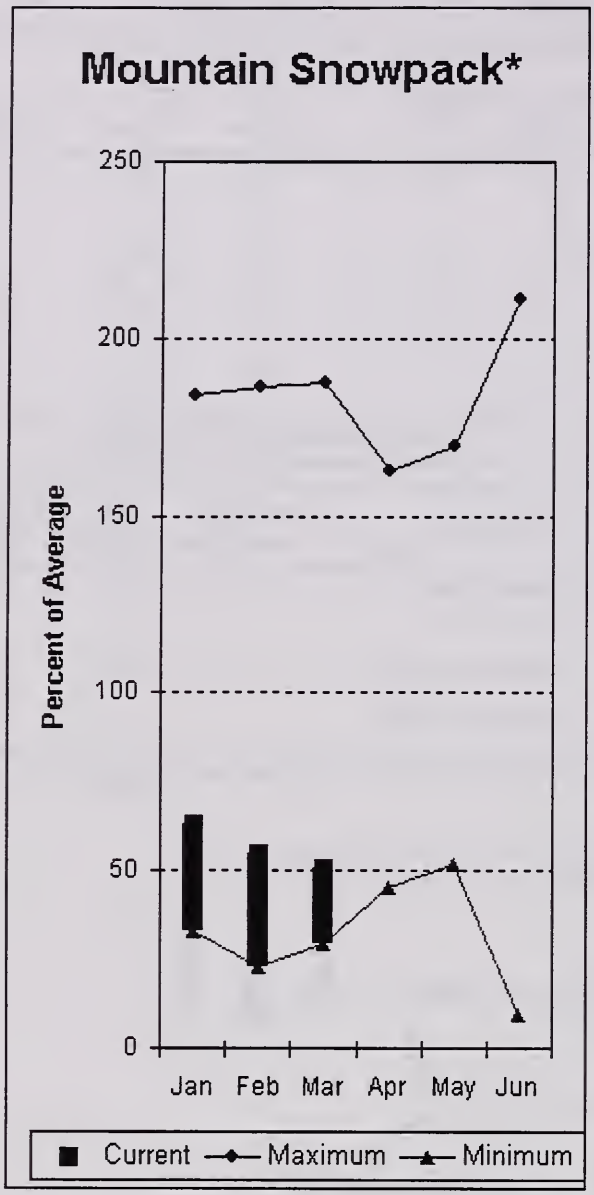
The average is computed for the 1971-2000 base period.

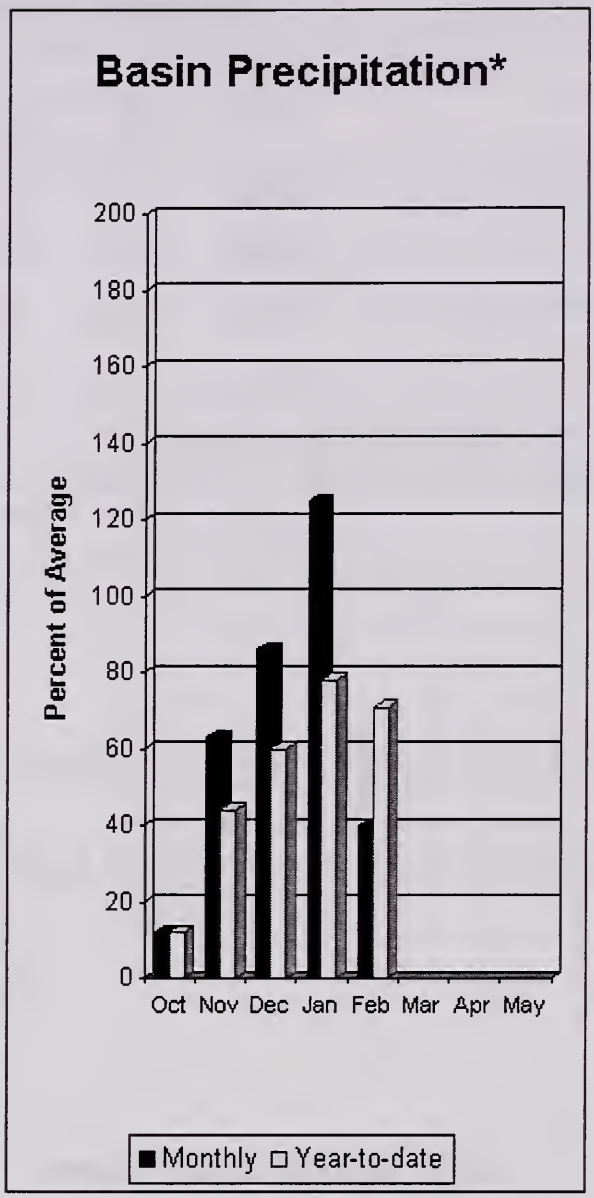
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Central Puget Sound Basins
Percent of Average
March 1, 2003

Snowpack - 41%
Precipitation - 71%

North Puget Sound River Basins





*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 70% of average for the spring and summer period. February streamflow in Skagit River was 75% of average. Other forecast points included Baker River at 67% and Thunder Creek at 71% of average. Basin-wide precipitation for February was 40% of average, bringing water-year-to-date to 71% of average. March 1 average snow cover in Skagit River Basin was 62%, Baker River Basin was 57% and Nooksack River Basin was 38%. Rainy Pass SNOTEL, at 4,780 feet, had 25.9 inches of water content. Average March 1 water content is 38.2 inches at Rainy Pass. March 1 Skagit River reservoir storage was 116% of average and 70% of capacity. Average February temperatures were 2 degrees below normal for the basin and 1 degrees above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	139	154	165	71	176	191	234
	APR-SEP	205	223	235	71	247	265	333
SKAGIT at Newhalem (2)	APR-JUL	1075	1203	1290	69	1377	1505	1864
	APR-SEP	1314	1455	1550	70	1645	1786	2217
BAKER RIVER near Concrete	APR-JUL	425	499	550	66	601	675	828
	APR-SEP	553	640	700	67	760	847	1050

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	960.9	843.1	818.3
DIABLO RESERVOIR	90.6	86.0	87.6	85.7
GORGE RESERVOIR		NO REPORT		

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	13	54	62
BAKER RIVER	3	59	57
NOOKSACK RIVER	1	41	38

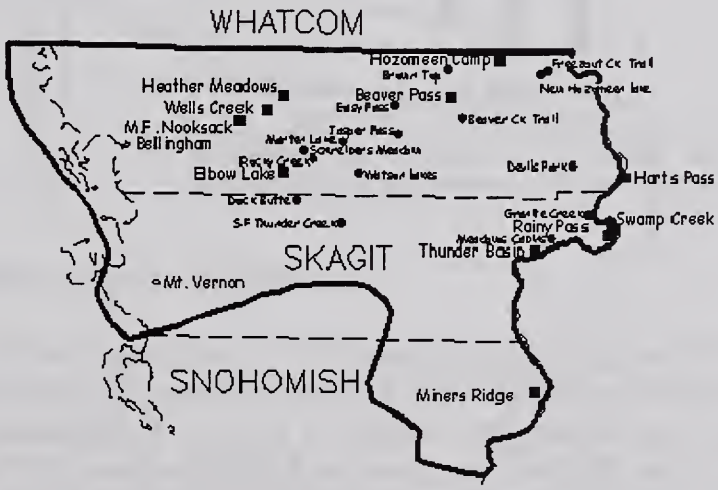
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

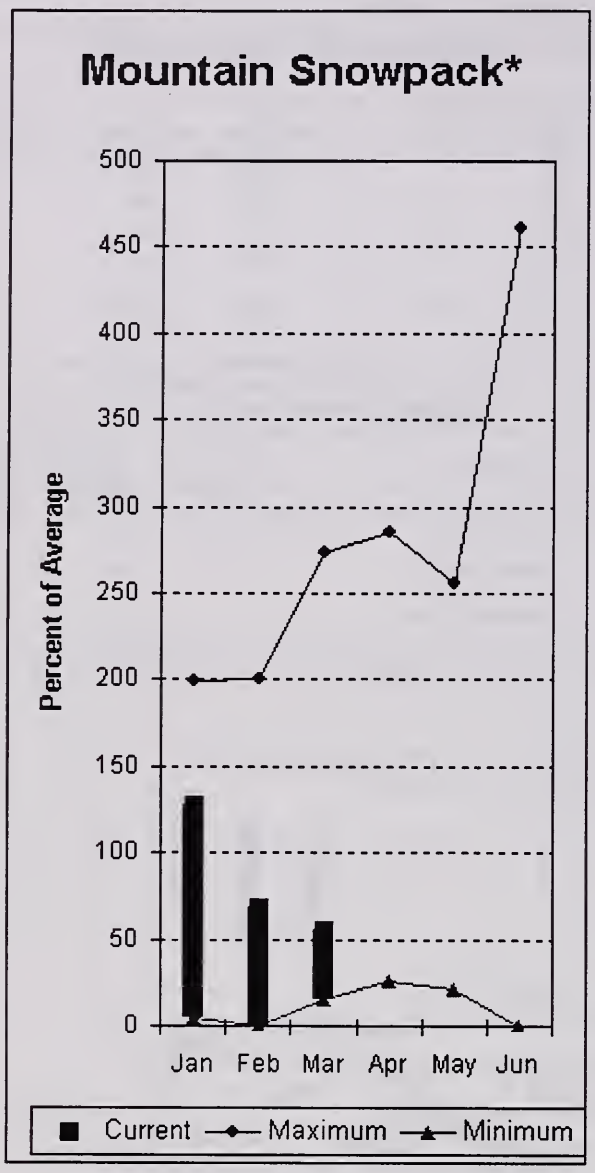
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

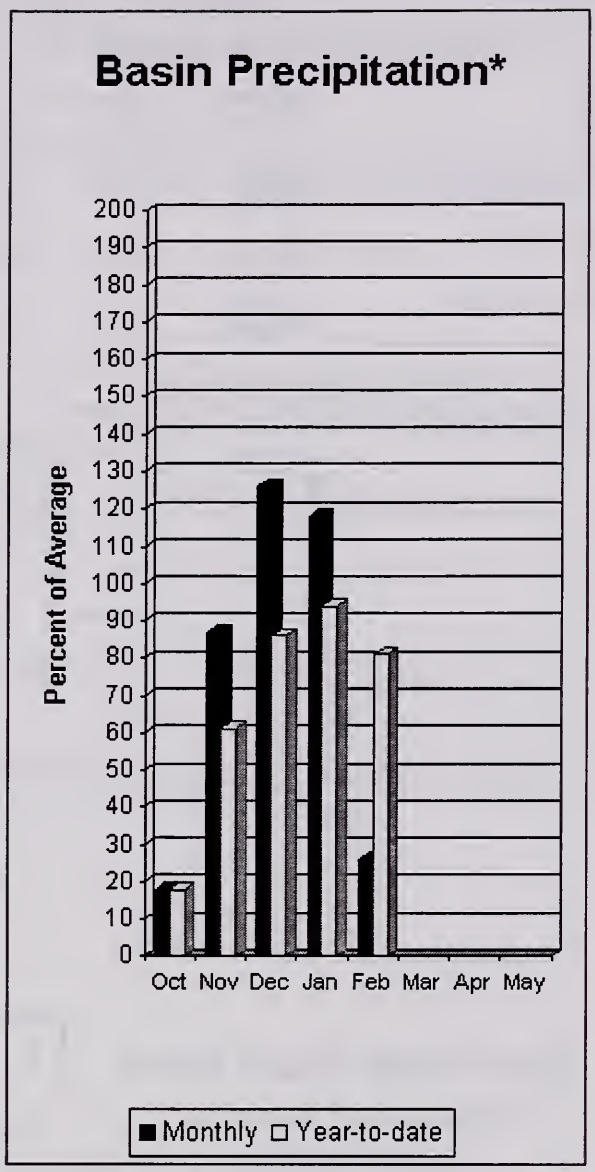
North Puget Sound Basins
Percent of Average
March 1, 2003

Snowpack - 51%
Precipitation - 71%
Reservoir Capacity - 116%



Olympic Peninsula River Basins





*Based on selected stations

Forecasted average runoff for streamflow in the Dungeness River and Elwha River basins is 76% and 74% respectively. Big Quilcene River should expect slightly below average runoff this summer. February precipitation was only 26% of average. Precipitation has accumulated at 81% of average for the water year. February precipitation at Quillayute was 3.89 inches. The thirty-year average for February is 12.35 inches. Olympic Peninsula snowpack averaged 55% of normal on March 1. However Hurricane Ridge snow course reported only 27% average snow-water-content on February 23rd. Mt. Crag SNOTEL, on the East slope, reported 70%. Temperatures were 1-2 degrees below average for the month and 1-2 degrees above average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2003

Forecast Point	Forecast Period	<<======= Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
DUNGENESS near Sequim	APR-SEP	98	108	115	76	122	132	152
	APR-JUL	81	89	94	76	99	107	124
ELWHA near Port Angeles	APR-SEP	299	341	370	74	399	441	503
	APR-JUL	256	288	310	74	332	364	419

OLYMPIC PENINSULA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2003

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	4	50	55
ELWHA RIVER	1	24	27
MORSE CREEK	1	52	57
DUNGENESS RIVER	1	46	51
QUILCENE RIVER	1	67	70
WYNOOCHEE RIVER	0	0	0

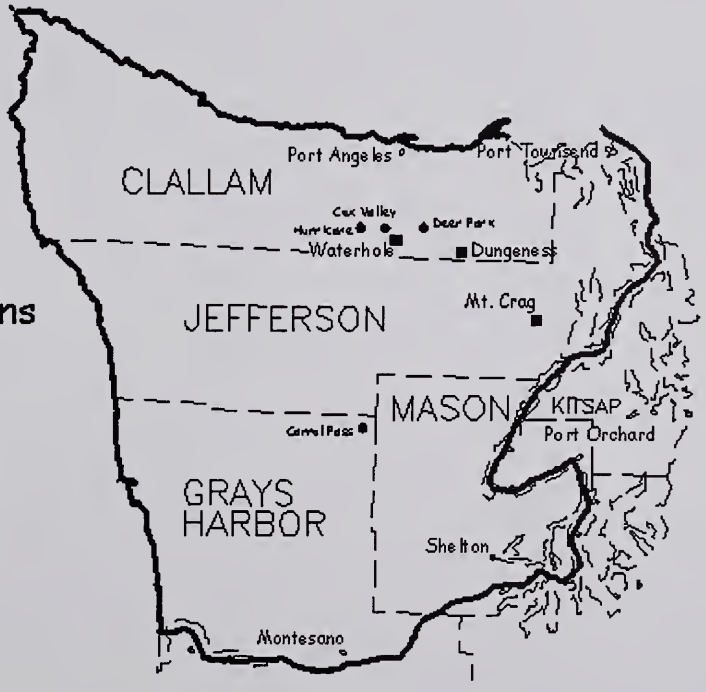
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Olympic Peninsula River Basins
Percent of Average
March 1, 2003

Snowpack - 55%
Precipitation - 81%



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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada

Ministry of Sustainable Resources
Snow Survey, River Forecast Centre, Victoria, British Columbia

State

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal

Department of the Army
- Corps of Engineers

U.S. Department of Agriculture
- Forest Service

U.S. Department of Commerce
- NOAA, National Weather Service

U.S. Department of Interior
- Bonneville Power Administration
- Bureau of Reclamation
- Geological Survey
- National Park Service
- Bureau of Indian Affairs

Local

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Chelan County P.U.D.
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Washington Water Power Company
Snohomish County P.U.D.
Colville Confederated Tribes
Spokane County
Yakama Indian Nation
Whatcom County
Pierce County

Private

Okanogan Irrigation District
Wenatchee Heights Irrigation District
Newman Lake Homeowners Association
Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA